

International Agricultural Trade
Research Consortium

International Negotiations on Farm Support
Levels: The Role of PSEs

by
Stefan Tangermann
Tim Josling
Scott Pearson*

Working Paper #87-3

The International Agricultural Trade Research Consortium is an informal association of university and government economists interested in agricultural trade. Its purpose is to foster interaction, improve research capacity and to focus on relevant trade policy issues. It is financed by USDA, ERS and FAS, Agriculture Canada and the participating institutions.

The IATRC Working Paper series provides members an opportunity to circulate their work at the advanced draft stage through limited distribution within the research and analysis community. The IATRC takes no political positions or responsibility for the accuracy of the data or validity of the conclusions presented by working paper authors. Further, policy recommendations and opinions expressed by the authors do not necessarily reflect those of the IATRC.

This paper should not be quoted without the author(s) permission.

*Dr. Tangermann is a professor in the Institute for Agricultural Economics, University of Goettingen, West Germany, and Drs. Josling and Pearson are professors in the Food Research Institute, Stanford University.

Correspondence or requests for additional copies of this paper should be addressed to:

Dr. Tim Josling
Food Research Institute
Stanford University
Stanford, CA 94305

INTERNATIONAL NEGOTIATIONS ON FARM SUPPORT LEVELS:
THE ROLE OF PSEs

Stefan Tangermann

Tim Josling

Scott Pearson

Institute for Agricultural Economics, University of
Goettingen, and Food Research Institute, Stanford University

June 1987

TABLE OF CONTENTS

Introduction	1
The Concept	2
Possible Uses of PSEs in Trade Negotiations	6
Measurement of PSEs	12
Policy coverage	13
Supply control policies	16
Consumer effects of policies	19
Treatment of animal feed costs in PSEs	22
Large-country effects	24
Voluntary export restraints and reference prices	25
World price and exchange rate fluctuations	26
Inclusion of non-agricultural policy effects	30
Institutional arrangements for measurement	32
Comparison with other measures	34
Conclusion	38
References	41

INTERNATIONAL NEGOTIATIONS ON FARM SUPPORT LEVELS:

THE ROLE OF PSEs

I. Introduction

Negotiations will start shortly on making domestic agricultural price policies more compatible with a well-functioning agricultural trading system. A major objective of the negotiations, confirmed by the OECD Ministerial Meeting on May 12-13, 1987, is to achieve a progressive reduction of agricultural support. One requirement of such negotiations is to have an empirical approach to clarify objectives and to monitor progress. In this context the use of Producer Subsidy Equivalents (PSEs), as recently employed by the OECD in its Trade Mandate Study, has been widely discussed.

This article examines the concept, possible uses, and issues of measurement of PSEs in light of the Uruguay Round of multilateral trade negotiations. Among the most difficult measurement issues are policy coverage, the treatment of supply control policies, and the use of world prices and exchange rates. Also discussed are the relationship between this measure and others used in previous GATT rounds and possible institutional arrangements that might facilitate agreed measurement.

II. The Concept

The concept of a Producer Subsidy Equivalent is straightforward: it is the subsidy that would be necessary to replace the array of actual farm policies employed in a particular country in order to leave farm income unchanged. It can be thought of as the "cash" value of policy transfers occasioned by price and non-price means. The main purpose of the measure is to aggregate in a manageable way a wide range of different price and non-price policies whose effects otherwise are not comparable.

The use of PSEs does not itself imply endorsement of any particular policy instrument. The PSE measure can include the transfer effects of any policy that can be linked directly to farm incomes, including input and factor market policies, direct transfers, price supports, and trade measures. Similarly, the measure can be applied to any level of government--local, regional, national, and supranational. In practice, the context in which it is used will determine the comprehensiveness of the actual policy measures to be aggregated into PSEs.

As originally developed by Josling for FAO (FAO: 1973, 1975), the measurement was geared essentially to expressing the effects of all policies that could reasonably be thought to be commodity specific. The OECD, in its Trade Mandate Study (OECD; 1987), broadened the definition by including more general measures like government expenditure on research, which are not necessarily commodity specific. The

USDA, in its recent analysis of PSEs in a large number of countries (USDA: 1987), broadened the definition further by including some of the effects of exchange rate distortions in the case of developing countries.

For use in trade negotiations, however, the definition may have to be more narrow in order to exclude government policies that have no (or only a negligible) direct impact on trade flows. Moreover, the existence of supply control policies will have to be taken into account for political for no other reason (Tangermann: 1986). (These issues will be discussed in more detail below.) However, even with a more narrow definition, PSEs would still have the major advantage over other measures that they would include the effects of all trade impacting domestic measures, as well as "gray area" measures (such as variable levies and state trading), which play an overwhelming role in agricultural policies and trade but have so far essentially remained outside of effective GATT discipline.

The PSE is calculated by commodity and evaluated in the first place as an absolute sum of money (say, million dollars) representing the total value of transfers received by producers of that commodity. The PSE can then be expressed in relation to several bases:

- PSE per unit of output (usually tons), by dividing absolute PSE value by the quantity produced;
- PSE as a percent of domestic production valued at domestic prices;

- PSE as a percent of domestic production valued at world prices.

In the third case the PSE is comparable to an ad valorem tariff, since such a tariff is also expressed as a percent of world prices. It is similar to an "adjusted nominal" rate of protection, where the adjustments cover all included input subsidies. The PSE could also be defined as a percentage of actual net farm income; such a definition would give an indication of income-dependency. It could also be defined as a percentage of net farm income at world prices, and hence be similar to the concept of an effective rate of protection adjusted for measured factor market policies. These variations will not be discussed here. In what follows, "PSE", unless otherwise specified, will be defined as the transfer per unit expressed as a percent of world prices.

It is also possible to aggregate PSEs across commodities in order to estimate the total value of transfers to the farming industry. Such measures may have a place when discussing the level of protection in the sector as a whole. However, the discussion that follows focuses mainly on the calculation of PSEs by commodity.

One important characteristic of PSEs is that their definition is inherently flexible. One can decide to include all government policies or to exclude certain policy instruments. For domestic purposes, all income-transferring policies might be included in order to illustrate the total

impact of policies on agricultural incomes. If PSEs were to be used in multilateral trade negotiations, there would have to be international agreement on which policies to include in the measurement of PSEs. It is likely, for instance, that a definition would be chosen such that only trade distorting policies would be included, since in international negotiations the principal interest is trade implications rather than income transfers.

III. Possible Uses of PSEs in Trade Negotiations

PSEs have so far been used mainly as a tool for policy analysis (see, for instance, Josling: (1980,1981). However, there is now active discussion of using this concept as a basis of commitments in trade negotiations. This could be done in a wide variety of ways. In particular, PSEs could either substitute for, or be combined with, more traditional GATT negotiating measures in a number of ways.

On the one end of this spectrum, PSEs could be made the central (if not the only) medium of GATT commitments and disciplines in agriculture; PSEs would then essentially substitute for traditional GATT rules in agriculture. Rules and disciplines on the use of particular policy instruments (like import restrictions or export subsidies) would no longer be required. Instead, all commitments and disciplines would be defined just in terms of PSEs. In particular, after multilateral agreement were reached on the definition of PSE measurement, all participating parties would bind their existing PSEs, very much like tariff bindings. Negotiations could then be held on gradual and balanced reductions of PSEs.

Such negotiations on PSE reductions could be pursued in different ways, just as negotiations on tariff cuts have in the past adopted different approaches. A wholesale approach would be a multilateral agreement to reduce all (commodity specific percentage) PSEs in all participating countries according to a common formula. One of the tariff cutting

formulas considered during the Tokyo Round (Senti: 1986, pp. 85-87, and Cline, et al: 1978), for example the Swiss formula, could be chosen, or a new formula could be negotiated.¹ The nature of the formula adopted would then implicitly express the approach toward a balanced reduction of agricultural support. The "graduality" of PSE reductions would have to be determined in terms of the time period over which reductions are to take place.

A different approach would be a request and offer procedure like that used for tariff negotiations in earlier GATT rounds. Individual countries would establish lists of requests and offers for PSE reductions for individual commodities in individual countries. The final outcome of such negotiations would lead to new PSE bindings.

In both of these approaches the commodity coverage would also be subject to negotiation. PSE bindings and

1 The "Swiss formula" for tariff reductions can be expressed as:

$$t_1 = (at_0)/(a + t_0)$$

where t_0 is the initial PSE level

t_1 is the new PSE level

and a is an negotiated coefficient.

A value of 0.5 for "a" gives a substantial reduction to high PSEs and could provide a credible target over a 5-year period.

A specific question would be how to treat negative PSEs which exist, for example, in a number of developing countries. One possibility would be to disregard negative PSEs altogether, in the sense that they would not be bound. This could be agreed on the grounds that negative PSEs do not harm the interests of other contracting parties which export agricultural commodities..

reductions could be agreed for only a small number of core agricultural commodities or comprehensively for all farm products. If only a selected number of commodities were made the subject of such PSE commitments, the remaining commodities would then continue to be covered by existing (or modified) GATT disciplines.

A modification of this commodity-specific approach could be that aggregate PSEs across all, or a selected list of, agricultural commodities would be bound and later reduced. Countries would then remain free as to how they wanted to allocate their overall PSE allowance to individual commodities. They could, for example, increase their PSEs on wheat if only they reduced sufficiently their PSEs on dairy commodities. This approach would allow for more flexibility in domestic policies and for reacting to specific commodity needs.²

If bindings and reductions of PSEs were agreed, they could in principle replace all other GATT disciplines for agricultural products. One could argue that, if PSEs were bound, there would be no need for minimum access commitments or equitable share disciplines. The PSE binding would ensure that governments could not pursue expansionary policies that could displace exports of other countries. For bound tariffs (to which bound PSEs would be analogous) the Gatt

² It would, however, imply the danger that new inter-commodity distortions are created. Given close substitutability among many agricultural products, in both production and consumption, this danger must not be overlooked.

does not provide for such additional disciplines. A major advantage of such an approach would be that market forces, in particular shifting comparative advantages, would then be allowed to influence trade flows -- much more so than if disciplines relating to trade quantities were superimposed on the trading system.

On the other hand, it could also be possible to combine PSE bindings with existing (or modified) GATT disciplines for agricultural trade, in particular the disciplines of Articles XI and XVI. The principle would be that whatever is truly binding in any particular case -- the PSE binding or the traditional GATT discipline -- would have to be respected by the country concerned. For example, an exporting country would have to respect its PSE binding as long as its exports did not exceed the equitable share. However, if the country nonetheless were to export more than its equitable share, it would have to respect the equitable share discipline. The advantage of such an approach would be that it would seem to provide more "security". The drawback, however, would be that all the difficulties the GATT has so far had with its disciplines in agricultural trade would continue to prevail. Moreover, such an approach would be less market oriented than a "pure" PSE approach.

One further step away from substituting PSEs for traditional GATT disciplines would be to use the PSE approach for only certain GATT disciplines, while other issues are left to be regulated under traditional GATT

rules. For example, it could be agreed that PSE bindings would apply only to exported commodities, while imports would remain subject to traditional GATT disciplines. While such an approach may be a way to handle the most pressing problems in agricultural trade, it would imply the danger that imbalances are created in terms of different stringency of GATT obligations for different countries.

Even further away from replacing traditional GATT rules by PSE disciplines would be an approach by which PSEs are used only for measuring the status quo and for defining the extent to which policies have to be adjusted, whereas commitments would then be defined in terms of policies rather than in terms of PSEs. After measuring existing PSEs, countries would have to reach agreement on how much PSEs should be reduced (for example by applying something like a tariff cutting formula). Negotiations could then take place on the way in which individual policy measures should be adjusted to effect the intended PSE reductions. For example, it could be agreed that a given country should reduce its domestic support price for a given commodity by x percent, or its export subsidy for another commodity by y dollars per ton, or should expand its import quota for yet another commodity by z tons, in order to reduce the respective PSE by the amount agreed. The new domestic support price, the new export subsidy, or the new import quota could then be bound.

This approach would have the advantage that the disciplines could be directly defined in terms of observable and controllable policy measures and that problems potentially resulting from fluctuating world market prices and exchange rates would be avoided. On the other hand, it would not always be easy to determine unequivocally by how much the policy instruments would have to be changed in order to achieve the intended PSE reduction. Quantitative restrictions would pose particular problems; in order to translate quotas into PSE changes one would have to estimate parameters or to make assumptions on price elasticities. Moreover, the potential of a more "pure" PSE approach in terms of leading to more world market stability (see below) would not be realized. Finally, such an approach would leave less flexibility for domestic policy choice.

At the far end of this spectrum of substituting PSEs for or combining them with more traditional GATT rules and disciplines is the suggestion to use PSEs only as monitoring devices. Obligations and commitments would continue to be defined in terms of existing or modified GATT rules and disciplines. PSEs would be used only as a starting point and an information base for traditional negotiations and as a way of monitoring progress in achieving the negotiating objectives. PSEs would then still serve the purpose of creating more transparency in agricultural policies. But using PSEs solely as measures of the effects of policy transfers would not change the GATT negotiating process.

IV. The Measurement of PSEs

If PSEs were to be used in international trade negotiations, their definition and measurement would have to be tailored to that particular purpose. International agreement on measurement principles would require a process of negotiations, which in itself could be difficult and time consuming. However, given the potential advantages of the use of PSEs -- and in view of the lack of success of traditional GATT approaches in agriculture -- such pre-negotiations could well be worth the effort.

Negotiations on the definition and measurement of PSEs could start from a number of basic premises which could well facilitate agreement. These premises are:

- Complete accuracy is neither achievable nor necessary. Even less than completely accurate definitions would help to establish more stringent disciplines than so far exist for agricultural policies.

- Political agreement reached in the negotiations, and the resulting will to accept commitments, is more important than full quantitative accuracy and precise conformity with economic theory.

- There is always the possibility of (and there will, after experience has been gained, be the need for) revision of definitions and methods of measurement.

- Scope for substitution exists between definitions and methods of PSE measurement and the ways in which rules and

disciplines for policy behavior are specified.

The following discussion of issues in measurement and rule definition is essentially based on a "pure" PSE approach of binding and then reducing PSEs. However, most of this discussion would apply if PSEs instead were combined with traditional GATT approaches.

PSEs are not difficult to calculate, given the availability of good information on national policies and prices and agreed procedures for dealing with certain empirical issues. But since some of these measurement issues have an important bearing on the interpretation and use of PSEs, they are dealt with in detail below.

The three most important measurement issues facing the use of PSEs in trade negotiations are the question of policy coverage, the treatment of supply control policies, and the issue of variable exchange rates and world prices. In all three instances the issues involve both technical and political choices. The appropriate way to measure policy effects depends crucially on the use to which the measure will be put. The flexibility of the PSE concept makes it particularly useful for purposes of political negotiation. This flexible nature of PSEs is illustrated in the following discussion.

a) Policy Coverage

The PSE approach to the measurement of protection has the ability to include a wide range of policies at different

levels of government. Unlike measures that rely solely on comparing domestic with world prices, PSEs can deal with non-price policies and with those that operate through input and factor markets. This ability to be comprehensive also tends to complicate measurement. The solution is presumably to reach agreement on criteria for inclusion or exclusion and to set up a system to monitor adherence to these guidelines. If PSEs were to be used in international discussions, procedures for measurement would have to be agreed in advance and the institutional support would have to be provided for their periodic updating and dissemination.

The primary criterion for deciding which policy instruments to include should be the desirability, from an international perspective, of discouraging use of those instruments as providers of agricultural protection. One could think of a simple categorization of policy instruments along the following lines:

List A: those that are "pure" transfers, agreed to have either zero or only negligible output and trade effects, or "pure" stabilization payments with no net transfers over time;

List B: those that encourage output directly or indirectly through the increase in farm profitability without concomitant supply control;

List C: those that involve supply control, with or without payments, and quantitative measures with similar output-restraining effects.

The policies in List A could be ignored if PSEs are to be used for international trade or policy negotiations. This should encourage the "decoupling" of support payments from price levels. For List B policies, negotiation on the basis of the implied PSEs would directly improve the trading system. List B policies should therefore form the core of PSE measurement in a multilateral negotiations context.

There will be a number of policies where allocation to List A or List B is not unequivocally clear. Difficulties are, in particular, created by policies which are not commodity specific but still increase overall profitability of farming activities. In these cases pragmatic decisions will have to be taken at the prenegotiation stage. At the end of such negotiations more or less comprehensive lists of policies would be established, allocating instruments to categories A and B.

The principal problems arise with List C policies, as would be true for any similar aggregative measure of expressing protection, such as nominal protection rates, "montants de soutien", effective protection rates, or the level of domestic prices. The problems are in part economic and in part political. The solutions, discussed in the next section, must therefore be both technically feasible and politically acceptable.

b) Supply Control Policies

If domestic production is effectively restricted through supply control policies, countries should receive negotiating "credits" on the PSEs for the commodities concerned. There are two reasons why such credits should be granted. First, if effective supply control is in place, the total transfer to producers as measured by traditional PSEs overestimates the effect on quantities produced and hence on trade. Part of the transfer to producers in this case is pure "economic rent" to which producers cannot react by expanding production because of the supply restriction. However, in trade negotiations it would presumably be only the trade impacting fraction of support that should be bound and made subject of negotiations.

Second, countries pursuing supply control policies do indeed make a "contribution" to balancing international markets, even if the primary objective of supply controls is domestic, such as to effect budget savings. From a purely economic point of view, supply controls lead to domestic inefficiencies in resource use. However, from an international trade perspective supply control policies (in countries that support their agricultural sectors) make a positive contribution by reducing "overproduction" and hence limiting the distortion of international trade that would otherwise occur. If countries pursuing such policies were not to receive "credits" in PSE measurement, they would not

be treated in a balanced or fair way. Hence, such countries would probably find it difficult to accept PSEs as a basis for trade negotiations.

For these reasons countries pursuing supply control policies should receive some deductions of their measured commodity PSEs. The question, though, is by how much the PSEs should be reduced in order to take into account the effect of supply control policies.

Ideally, the PSE for a product under supply control should be reduced exactly by the part of the overall amount of support that is above the support which would have sufficed to induce farmers to produce the quantity supplied under the supply control scheme. In order to do this properly, the "shadow price" for the commodity concerned would have to be estimated.³ This price cannot be observed statistically, since the working of the supply control obscures actual producer incentives.

There are various ways in which the shadow price could be estimated empirically, either on the basis of market information (in particular where quotas are tradable) or through more sophisticated econometric methods (in particular those based on duality theory). However, in most cases such methods are either too complex or too ambiguous in their results to be successfully used as a basis for

³ The shadow price is the domestic producer price that would have determined the quantities actually produced in the absence of any form of supply control.

international trade negotiations. Hence, more simple and straightforward approaches should be chosen.

Two possibilities are available. First, one could define a limited number of categories of supply control policies and agree on flat rate percentage reductions of the PSEs as traditionally measured for these categories (say, 10, 20, and 30 percent reductions). Supply control policies as pursued in individual cases would then have to be allocated to these categories according to simple and unequivocal criteria. These criteria should create a ranking of supply control policies with regard to the degree of their effect (i.e., the extent to which they reduce domestic production below what would have been produced in the absence of the policies concerned). It may be possible, though it certainly would be difficult, to agree on such criteria.

A second approach is based on the "self-election" of the countries concerned and provides political incentives to make contributions to improving the situation in international trade. Countries that believe they pursue effective supply control policies could be granted a given percentage reduction of the PSE concerned (say 30 percent) if they would agree to bind the absolute PSE value (in million dollars) rather than, as otherwise, to bind the percentage PSE. The result of this approach would be that such countries, as long as they do not expand the volume of domestic production, would then be subject to the equivalent

price disciplines (in PSE per ton) as in all other cases. However, if the country concerned were to allow domestic production to increase, it would have to bring down its PSE per ton in order to comply with the overall PSE value bound for the commodity under consideration.

If countries believe that their supply control policies are effective, they should not experience major difficulties with this approach. If they are less sure about their own policies, they would be free to choose the percentage PSE (rather than the absolute value PSE), although by doing so they would forego the supply control "credit". The great advantage of such a method is that there would be no need to determine at the international level whether in any particular case a supply control policy is actually restricting domestic production effectively. The government of the country concerned could make its own choice under this "self-election" approach.⁴

c) Consumer Effects of Policies

The calculations of the extent of protection employed by the FAO, the OECD, and the USDA make a clear distinction between the effects on the producer (PSE) and that on the consumer. This consumer effect is called the "Consumer

⁴ The credit percentages for this approach would be open to negotiation and could vary from case to case, depending on the extent to which the supply control is thought to reduce domestic production. The danger of a deadlock in negotiations on the credit percentage is small since the country concerned could, if it were not happy with the credit percentage, always opt for the usual percent PSE rather than for the reduced absolute PSE.

Subsidy Equivalent" (CSE) and is defined in an analogous way. The CSE measures the extent to which expenditure on food consumption is subsidized by government policies.⁵ To arrive at an indication of the trade impacts of protection, consumption effects are as necessary as production effects. For a simple tariff the two effects will be linked: the one may be taken as an indication of the other. Measuring the price advantage gained by the tariff to producers will also give the degree of disprotection afforded to consumers. By contrast, a deficiency payment policy deliberately changes the producer price relative to the consumer price of a product. For many agricultural policies the distinction between producer and consumer impacts is likely to be significant.

The issue to be faced in trade negotiations is whether, and to what extent, to incorporate these consumer policy effects along with those on production incentives. Though logic would suggest a completely parallel treatment of consumer impacts, in practical terms this may not be necessary. If farm support policies were bound, as suggested above, on the basis of PSEs, there may be no particular need to bind CSEs as well. Reductions in producer subsidies would tend to lower the taxes on consumption (if border measures or domestic purchasing programs were employed) or leave them unaffected (if deficiency payments or other direct producer subsidies were

⁵ For developed countries, the CSE is usually a negative amount, as a result of higher consumer prices.

in use). Where such direct producer subsidies grant some implicit benefit to consumers, through the lowering of market prices (at home or internationally), those subsidies will also be lowered by a general roll-back of PSEs. Though countries should be encouraged to reduce consumer taxation, and thus expand markets, much of this will occur pari passu with the reduction in protection to producers.

One qualification should be added to this suggestion to de-emphasize CSEs. It would be desirable to dissuade countries from moving from support systems with benign consumer effects (such as deficiency payments) to those which tax consumers (such as import levies and export subsidies). To this extent, countries should get "credit" for having CSEs lower (in absolute terms) than their PSEs. Moreover, any policy change that moves toward a lower consumer burden for any given level of producer support should be "rewarded" in negotiating terms.⁶

One radically different approach to the issue of CSEs should be mentioned, even if only to dismiss it as academic rambling. Suppose one calculated CSEs for all products and agreed to bind and reduce all negative CSEs -- regardless of producer subsidy levels. This would change the whole nature of the debate. Countries would be meeting to reduce consumer food taxes, not farm price levels. Farm policies would continue but under the constraint that the taxpayers,

⁶ The special case of relieving the "burden" on livestock producers as "consumers" of feed is discussed below.

not the consumers, would make the politically-determined transfers. Trade would still be distorted to the extent that production incentives were given. But the limits on such distortion would be direct and stringent. Producers would have full access to foreign markets but compete with subsidized domestic production. The ultimate issue is whether such a system of transparent domestic producer subsidies would be better than the present mix of trade barriers and export subsidies. If so, a direct assault on CSEs, rather than PSEs, would be worth consideration.

d) The Treatment of Animal Feed Costs in PSEs

One issue of considerable significance is the measurement of PSEs in the treatment of animal feed policies. High prices for feedstuffs clearly act as negative subsidies (i.e., taxes) on the livestock industry. They would therefore normally be taken into account in the calculation of PSEs for livestock activities. To omit these policies from the calculations would overstate the incentive effect of high support levels for livestock product prices, much of which might merely offset higher feed costs. Previous measurement efforts have not always followed this precept and hence have overstated PSEs in certain cases.

It is equally clear that any calculation of CSEs must also include intermediate consumption, in the animal feed industry, as a part of the total consumption impact. Trade patterns will be influenced by both the impact on livestock

production and on feed use. Livestock production levels are influenced by purchased feed costs, relative to the price of the output, and the use of an ingredient in purchased feed is in turn influenced by its price relative to other ingredients and to the profitability of the livestock enterprise. PSEs and CSEs used for trade negotiations need to account for each of these effects. IF the PSEs and CSEs are used as transfer measures, care should be taken not to double-count the effect of feed ingredient price policies. The "tax" on livestock "consumers" of high corn prices, for instance, is already measured in the negative impact on livestock farmers' income.

Countries that have high prices for livestock feed ingredients, such as grain, should be given the incentive to reduce those prices to encourage more consumption. If PSEs on livestock include allowance for the tax-effect of feed prices, such PSEs will increase when feed prices go down. This will put pressure on countries to reduce livestock prices along with those for feed ingredients. Thus, additional trade distortions which might otherwise arise will be avoided. By contrast, if feed costs are omitted from livestock PSEs, then the incentives to livestock production are not adequately captured. Changes in feed prices would not appear to change livestock protection, though in practice one knows that it would.⁷

⁷ The only argument for omitting such elements in the calculation is the possible difficulty of obtaining average feed use statistics for individual livestock types by

e) Large-Country Effects

PSEs as traditionally measured do not explicitly take into account the effects of large countries' policies on world market prices (USDA: 1987, p. 27). For example, if a large country protects domestic producers and expands production, this will tend to depress world prices. Since the PSE estimate would be based (directly or indirectly) on actual world prices, it would include not only the policy induced domestic price increase but also the resulting world market price reduction. It would in this sense be "exaggerated". Conversely, when a large country controls domestic supplies, world prices are higher than they would have been in the absence of these supply controls (although still lower than if the country had not pursued protectionist policies in the first place).

One could argue that the inclusion of world price effects should be avoided and that the PSEs of large countries should be adjusted for their world price effects. However, there are two reasons why such adjustments would be neither necessary nor justified. First, in negotiations and agreements on tariff reductions large-country effects are not taken into account, even though large countries' tariffs also have depressing effects on world prices. Second, large countries have particular responsibilities for the functioning of international trade. If they pursue policies

country. It might be necessary to use "rules of thumb" if particular national data are missing or controversial.

that depress world prices, there is no good negotiating reason why this should not be measured. If, on the other hand, they control domestic supplies, world market prices are somewhat less depressed. This will also be reflected in the PSE measure, which will be lower in such cases. There is no reason to give the country "additional credit." For both these reasons PSEs should not be adjusted for large-country effects on world prices.

f) Voluntary Export Restraints and Reference Prices

Some instruments of protection against imports lead to higher cif prices. This is certainly the case for voluntary export restraint agreements (VERAs) and orderly marketing agreements.⁸ The protectionist effects of such measures are not gauged by PSEs (or by any similar indicator based on budget information in the importing country or on cif price information). Indeed, replacement of, say, an import tariff by an equivalent VERA would lead to a reduction in the PSE as usually measured, without reducing protection for domestic producers. Hence, an agreement to bind and reduce PSEs might induce governments of importing countries to switch from tariffs and other forms of import protection to VERAs and other measures that "disguise" protection. It would, therefore, be desirable to include the effects of such measures in the measurement of PSEs.

⁸ It may also happen under "reference price" schemes, such as those used by the EC in its fruit and vegetables market regimes, if exporting countries establish export monopolies to make sure that the reference prices are not undercut.

One way of doing this is to compare domestic prices with international prices. Generally one would use observed cif prices in these cases. However, this would not work in the case of VERAs, since cif prices are distorted as a result of the policy itself. Hence, estimates of the "true" cif price would have to be based on cif prices of the same commodity in other importing countries whose comparable imports were not subject to such measures. Such price information could be offered, in the process of measuring and reviewing PSEs, by these other importing countries. Alternatively, the exporting countries themselves could offer information on the extent to which prices are distorted as a result of the policies under consideration.

In order to avoid lengthy debates on the appropriate adjustment of PSEs a general "rule of thumb" could be included whenever such policies are in existence. The PSE (as traditionally measured) of the commodity concerned would be increased by x percent (say, 30 percent) automatically, unless the importing country were to provide evidence that a lower increase is justified. This approach would not reduce the difficulty of making an appropriate estimate of the "true" cif price. However, it would place the burden of proof on the importing country concerned, and it would in that sense make the collection of information easier.

g) World Price and Exchange Rate Fluctuations

Complications in implementing a PSE approach in international trade negotiations would arise because of fluctuations in world prices and exchange rates. These fluctuations do not cause serious measurement problems, since average values for the period concerned are used in calculating PSEs. Important issues relate rather to the acceptability of PSE-based disciplines and to the compliance with such disciplines. In particular, what happens if PSEs increase not because of policy changes in the country concerned but because of falling world prices or because of exchange rate changes? Would domestic prices (or subsidies) then have to be brought down in order to comply with the bound PSEs?

In one sense, this is exactly what should occur. Tariffs, the basic GATT instrument, do not provide protection against fluctuating world market prices and exchange rates. Moreover, and more important, only adjustments of domestic prices to changing world market conditions can improve the stability of international trade, because the stickiness of domestic prices greatly adds to variability of world commodity prices. If all countries participating in international agricultural trade could agree to adjust their domestic prices to changes in world prices, world markets would be much more stable. Hence, the need for protection against fluctuating international prices would be greatly reduced. To the extent that exchange rate

changes indicate changing international comparative advantages, there are good reasons to adjust domestic markets to such changes. Finally, because it is always difficult to distinguish between short-run fluctuations and changing trends, protection against price and exchange rate "fluctuations" always is in danger of creating added protection.

However, in spite of these valid economic arguments most policy makers prefer to protect domestic markets against the influences of international fluctuations. Hence, the acceptability of a PSE approach might well depend on the scope it leaves for domestic price stabilization. But international prices could be very unstable if countries were completely free to pursue domestic policies without any regard whatsoever to where international prices move in the medium to long term. From this point of view the issue is what the appropriate (and acceptable) degree of responsiveness of domestic policies to international price movements should be, or what the appropriate time period should be over which countries can "average" their domestic policies in relation to international price changes.

An approach that would bind countries not to exceed their given PSEs on any particular day would certainly not be acceptable to most agricultural policy makers (although this is exactly what happens with bound tariffs). On the other hand, if a bound PSE were to relate only to the average of a, say, ten-year period, responsiveness of

domestic markets to what happens in international trade would be close to non-existent. Something like an approach of "averaging" over a three-year period might be an acceptable compromise. Countries would then have to move domestic policies in parallel to a three-year moving average of world market prices.

PSEs would be measured year by year. But to establish a country's "record", its average PSEs of the most recent three-year period would be compared with its PSE bindings. This would mean that countries would always have to "remember" their actual PSEs of the most recent two years when they come to take decisions on this year's policies. If they have exceeded their PSE bindings in the past two years, they would have to make sure that they adjust this year's policies enough to bring their average PSE for the three-year period down to the bound level.

An agreement to this effect might be enough to offset the problem of fluctuating world prices and exchange rates. However, there can be problems of implementation. In particular, during any particular year world prices could drop so much that contrary to best intentions the three-year average PSE (including the last two years) ends up being higher than the bound level. Since it will never be possible to determine whether the government of the country concerned really had "best intentions" to remain within its allowed PSE range, there will have to be unequivocal procedures for such situations.

Two possibilities arise. First, for any particular year's policy decisions, world prices of the previous year would have to be considered. In order to assess the three-year average PSE against the GATT binding, the calculation of the three-year average PSE would then be done such that for year one (of the three-year period) actual world prices of that year would be used, whereas for years two and three actual world prices for year two would be used. Second, rather than basing this year's policy decisions on last year's prices, the GATT secretariat could publish forecasts of this year's world prices. Policy decisions then would have to be based, in terms of their PSE implications, on these secretariat forecasts. The assessment of PSEs against bindings would then be done as in the first procedure, except that the secretariat's estimates would be used instead of last year's prices. This approach would to some extent have a precedent in the design of the IMF Compensatory Financing Facility where export revenues of any particular year are assessed against a moving average of export revenues centered around the year under consideration, i.e., including expected export revenues in years to come.

h) Inclusion of Non-agricultural Policy Effects

If PSEs can be measured to capture most agricultural policies of any significance, the issue arises as to whether the impact on non-agricultural policies on agriculture

should also be taken into account. This question is of particular relevance in situations where high levels of protection in the non-farm sector have a significant impact on farm costs and where actual exchange rates do not adequately reflect the underlying realities of the external value of national currencies.⁹

One can easily imagine a PSE measure that represents the sum of direct policy interventions, spill-over effects from policies in other areas (such as non-agricultural tariffs, labor market policies, etc.), and a factor representing the exchange rate distortion. Such a measure would give a more accurate picture of total government policy impacts on agriculture. The problem is that such a measure may be less useful for the purposes of international trade negotiations. GATT Contracting Parties could well be sympathetic to the needs of some developing countries to offset through trade policies the impacts of their inappropriate macroeconomic policy. But the objective should be to assist such countries to improve both trade and macro policies, rather than to validate one with reference to the other.

In this sense, it is probably better to negotiate on agricultural policies, non-agricultural trade policies, and macro-economic policies separately, knowing that they are interrelated in terms of their domestic impact. Broadening

⁹ These two situations are, of course, often linked. High protection leads to exchange rate overvaluation, which in turn subsidizes imports and taxes exports.

the definition of PSEs to include the effects of non-agricultural policies would only be useful if all such policies were "on the table" in the same negotiations. If this were not the case, then it would be at best confusing and at worst misleading to negotiate on one set of PSE-measured policies in the agricultural talks, knowing that other "parts" of the PSE were being negotiated or decided in a different place.

i) Institutional Arrangements for Measurement

Another important practical question is who should measure and monitor PSEs. The obvious alternatives are national institutions in each participating country or a central institution in a multilateral agency.

There are various proposals for setting up a network of independent institutions in individual countries, which would collect and publish information on the pursuit and the effects of trade impacting government policies. It has been suggested that such institutions (which would function like, for example, the Australian Industries Assistance Commission) could regularly establish "protection balance sheets". For agriculture, such balance sheets could take the form of PSE calculations.

Although the establishment of such a network of national institutions and the increasing transparency they can provide would be an important advance, it appears doubtful that their work could form a universally accepted basis for commitments at the international level. The

results of PSE calculations must be open to scrutiny by all parties concerned, and the methods applied to PSE measurement should be as homogeneous across countries as possible.

It would therefore appear that an international institution based on multilateral agreement would be preferable to measure PSEs for agricultural trade negotiations. The GATT secretariat would be the most natural candidate for this activity. It would have to be provided with adequate resources to fulfill this function.

Another element of the institutional arrangement could be the establishment of an annual review process. For these reviews all participating countries could meet in order to consider the results of the secretariat's PSE calculations, the progress made in policy adjustments, and the methods used for PSE assessment. Besides its potentially important contributions to the functioning of the PSE approach as such, these reviews could fulfill an important role in creating more transparency in agricultural policies.

V. Comparison with Other Measures

The discussion so far has concentrated on PSEs as a possible measure of the level of farm support. The practical advantages and disadvantages of this measure can only be assessed in the light of other possible measures that might be used in negotiations, and the theoretical value of PSEs can only be seen by comparing it to existing normative approaches.

One can categorize the alternative measures for use in trade talks by the level of analysis required. At one extreme are purely descriptive or qualitative "measures" such as the domestic legislation underlying policies. More quantitative manifestations of these regulations are the actual administrative decisions implementing them, including domestic price levels, quota levels, and quality standards. Along with financial data on policy costs, these might be said to yield "absolute" measures in the sense that they are specific to a particular country and expressed in local currency.

At the next level of analysis are measures that require some degree of comparison of domestic with international markets--in particular those that use world prices and exchange rates. These "relative" measures might seem to be more controversial, in that there is widespread scope for disagreement on the appropriate exchange rate or the level of world price to be used. 10 Nominal protection rates

10 A tariff is, of course, a relative measure. Since it is also the administrative instrument, no additional analysis

(usually taken as the relationship between domestic and world producer prices) and effective protection rates (taking into account input policies by comparing value added at domestic and world prices) are of this type. The PSE is also a relative measure in the same sense, although in many instances one can avoid direct use of world-domestic price comparisons by making use of financial data on budgetary expenditure. The aim is ultimately to have an index of producer incentive effects that can be compared over time and across commodities and countries.

The fundamental question is thus the extent to which countries can agree on such a relative measure rather than negotiating on absolute measures such as price levels, production targets, expenditure ceilings, export quantities, and import quotas. The PSE offers a way of customizing such a measure to the needs of the trade talks. Effective and nominal rates of protection require much of the same information to calculate and are equally vulnerable to controversy over exchange rates and world prices. Neither of these more established measures handles supply control policies. They are essentially less complete and less flexible. Nominal protection rates have the advantage of simplicity to offset their incomplete coverage. Effective protection rates are neither complete nor

is in general needed. It is the non-tariff nature of agricultural protection that makes a "relative measure" both essential and also problematic.

particularly simple to calculate and interpret--in particular when free trade value added is low or negative.

National trade delegations and their parent ministries usually will wish to take the analysis much further. The "relative" measures themselves are the inputs into models that simulate the changes in market balance and in the profits of various sectors as protection is varied. The "analytical" measures of policy effects, such as the quantitative impact of policies on trade flows, require knowledge of behavioral parameters (supply and demand elasticities). It is unlikely that there would be enough agreement at the international level to allow negotiation on the basis of measures dependent on elasticity values. Such analysis will probably remain the province of individual governments and of academics.

The same comment is even more true of the "ultimate" in measurement of policy effects, the impact on real income and its distribution. Such welfare and efficiency studies are invaluable in indicating the magnitude of the problem and the gains from removing impediments to mutually beneficial trade. They are less well suited to balancing domestic (or international) costs and benefits in the political market place of votes and pressure groups. Even national delegations do not always make use of welfare calculations to formulate their negotiating positions, though such studies may well influence the underlying strategies.

In such a hierarchy it is clear that PSEs are intended as a pragmatic approach to defining a measure more meaningful than producer price levels alone, yet less controversial than the quantitative effect on trade. They are not a welfare measure per se, but they have uses as inputs into such calculations. They exist primarily to improve the transparency of domestic measures and hence to facilitate international discussion.

VI. Conclusion

The discussion above appears to lead to the following conclusions:

a) If countries choose an "across-the-board" approach to the issue of negotiating on agricultural policies, the PSE has a number of advantages. Among these are that

-- it can include a wide variety of domestic policy instruments, thus putting these policies "on the table" for the first time;

-- it can be tailored to exclude "desirable" programs, such as those that decouple income support from price incentives and concentrate on those that have an effect on trade;

-- it can be modified to handle supply control policies at least as well as any other aggregate measure;

-- it can be added up across commodities to give overall protection levels.

-- Countries would retain flexibility to adjust domestic policy within the specified PSE level;

b) If countries choose negotiations of the more traditional type, with "offer and request" bargaining at the bilateral level and extending the concessions to all Contracting Parties, then PSEs have a more limited role. Countries could choose to frame their requests and offers in terms of PSEs. This would have the following advantages

-- domestic policies would fall within the scope of such requests in terms of their effect on trade;

-- negotiations on different commodities could proceed using different methods of measurement and compliance.

c) As countries consider the rules and obligations relating to agriculture within the GATT, certain aspects of behavior may be defined in terms of PSEs. These could include

-- limits to subsidies on export products, in conjunction with the market share approach;

-- bindings on "gray area" import measures such as variable levies, together with an agreement to subject these to GATT disciplines;

-- limits to quantitative trade restrictions, where these cannot be removed because of domestic policy constraints;

-- incorporation of the trade distorting effect of state trading where this involves differential buying and selling prices.

The use of PSEs would require considerable international agreement on issues such as policy inclusion, treatment of supply control, and allowance for fluctuations in currency and world prices. All these issues arise with other possible measures, such as the nominal and effective rates of protection: they are inherent in the diversity and reality of agricultural policies. The key question is the political will to negotiate seriously to reduce agricultural

protection. If the will is there, some form of quantitative measure will be needed and a way will be found to deal with the technical problems. As the OECD work has demonstrated, such a goal is not overly ambitious. The next stage is up to governments and politicians to make operational the agenda agreed at Punta del Este.

References

FAO, (1973) Agricultural Protection: Domestic Policy and International Trade. C 73/LIM/9. Rome, November.

FAO, (1975) Agricultural Protection and Stabilization Policies: A Framework of Measurement in the Context of Agricultural Adjustment, October.

Cline, W.R., W. Watanabe, T.O.M. Kronsjo, and T. Williams, (1978) Trade Negotiations in the Tokyo Round: A Quantitative Assessment, Brookings Institution.

Josling, T. (1980) Developed Country Agricultural Policies and Developing Country Supplies: The Case of Wheat, IFPR Report 14, March.

Josling, T. (1981) Intervention and Regulation in Canadian Agriculture: A Comparison of Costs and Benefits Among Sectors," Economic Council of Canada, March.

OECD, (1987) National Policies and Agricultural Trade. Paris, May.

Senti, R., (1986) GATT - Allgemeines Zoll- und Handelsabkommen als System der Welthandelsordnung. Zürich.

Tangermann, S., (1986) Putting Agriculture in the GATT. Paper prepared for the Agricultural Trade Project of the American Enterprise Institute. Göttingen, March.

USDA/ERS, (1987) Government Intervention in Agriculture: Measurement, Evaluation, and Implications for Trade Negotiations. Staff Report No. AGES861216. Washington, D.C., January.