DISCUSSION PAPER 88.3

EARLY ACTION ON AGRICULTURAL TRADE REFORM

AUSTRALIAN
BUREAU OF AGRICULTURAL
AND RESOURCE ECONOMICS

Australian Bureau of
Agricultural and Resource Economics

Discussion paper 88.3

EARLY ACTION ON AGRICULTURAL TRADE REFORM

APPLICATION AND EFFECTS

Project 11336

Michael G. Kirby, Henry C. Haszler,
David T. Parsons and Michael G. Adams

Australian Government Publishing Service
Canberra

ISSN 1030-9527
ISBN 0 644 08287 9

Australian Bureau of Agricultural and Resource Economics
GPO Box 1563 Canberra 2601

Telephone (062) 469111 Facsimile (062) 469699 Telex AGEC AA61667

Printed in Australia by Better Printing Service, 44 Paterson Parade, Queanbeyan NSW 2620

FOREWORD

Agriculture has a prominent place on the agenda of the current 'Uruguay Round' of multilateral trade negotiations, launched at Punta del Este in September 1986. This is the first occasion since the establishment of the General Agreement on Tariffs and Trade in 1948 that agricultural trade reform has assumed such a prominent place in multilateral trade negotiations. The differences in various aspects of the negotiating proposals on agriculture so far tabled in Geneva suggest that negotiations on agricultural policies may well be long and difficult. However, there are some common areas which may provide scope for progress. This study concentrates on one such common area - the desire of many of the major participants to initiate quickly some policy adjustments.

This study forms part of a program of international trade research being conducted within the Bureau and is designed to provide research support for multilateral initiatives on agricultural policies.

J.T. LARKIN
Acting Director

Australian Bureau of Agricultural
and Resource Economics

Canberra

June 1988

ACKNOWLEDGMENTS

This paper was prepared within the Economic and Policy Analysis Branch. The country studies on the United States, the European Community and Japan in section 3 and appendix C were prepared by Ivan Roberts, Simon Hearn (Department of Primary Industries and Energy) and Paul Riethmuller, respectively. Vern Roningen (Economic Research Service, US Department of Agriculture) made a valuable contribution to section 4. The authors also wish to acknowledge the helpful comments of a wide range of colleagues in the Bureau (in particular Sally Jones), the Department of Primary Industries and Energy and the Department of Foreign Affairs and Trade.

The research reported in this paper would not have been possible without the technical cooperation and assistance of the Economic Research Service of the US Department of Agriculture which provided access to their database on producer subsidy equivalents and their world agricultural trade model, SWOPSIM.

CONTENTS

Figures

Tables

EARLY ACTION ON AGRICULTURAL TRADE REFORM: APPLICATION AND EFFECTS

SUMMARY

Although some changes to agricultural policies have been made recently in key developed agricultural trading countries, much more is required if agricultural protection is to be reduced substantially so that comparative advantage can play a more influential role than presently in determining the pattern of trade flows.

The current Uruguay Round of multilateral trade negotiations under GATT (General Agreement on Tariffs and Trade) was launched at Punta del Este in September 1986 and offers an opportunity for further progress. Agriculture has been given a prominent place on the agenda for the first time in forty years.

Since July 1987 six major proposals for agricultural reform have been tabled in the Negotiating Group on Agriculture in Geneva. The differences between these proposals indicate that it may well take some time to negotiate and implement a revised policy framework for agriculture.

Recognising this point, all the agricultural negotiating proposals, except that of the United States, support the need for some form of action in the short term as part of a multistage process of policy change. There is sufficient common ground among the proposals on 'early action' strategies, particularly with respect to timing, policy and commodity coverage, and the use of aggregate measures of farm support, to suggest that a reasonable basis exists for initiating agricultural policy change.

The paper illustrates how an early action package of initial agricultural policy changes could be assembled and what it would imply for policy adjustment. The illustrative package is developed for the United States, the European Community and Japan, for a subset of agricultural commodities (wheat, major feed grains, rice, sugar, soybeans, beef and dairy). It is based on policy adjustments which would reduce output assistance for the specified commodities and countries by 10 per cent from the levels applying in 1986.

The policy changes that are discussed focus on reducing administered prices so as to narrow the gap between administered and world prices. Where considered appropriate, the manipulation of other variables, including production quotas and area reduction programs, is considered in the policy package designed to cut back support levels.

Some of the potential impacts, on production, consumption and trade, of a partial liberalisation of agricultural policies are analysed using the static world policy simulation (SWOPSIM) framework developed within the Economic Research Service of the US Department of Agriculture. One of the innovative features of the model used in this analysis is the aggregation of countries into groups according to their geographical location and agricultural trade status, rather than the more common classification according to development status. The major findings from the simulation analysis include:

- *The effects on world prices and aggregate trade of a simulated 10 per cent reduction in output assistance by all countries are relatively small.*

- *However, changes in domestic producer and consumer prices as a result of reduced agricultural assistance (and taxation) cause significant changes in production, consumption and net trade in many regions.*

- *All country groups stand to gain overall from participating in the 10 per cent reduction in assistance. The distribution of these gains varies within groups. Consumers and taxpayers gain at the expense of producers in some cases while in other cases the reverse holds true.*

- *If the major developed countries (the United States, the European Community and Japan) reduce their agricultural protection, then all remaining groups have an economic incentive to do likewise.*

- *All groups, with the exception of African food importing countries, gain more the greater is the reduction in agricultural protection.*

The paper concludes that there would be net economic benefits from a partial reduction in agricultural protection through an early action program within the Uruguay Round.

1. INTRODUCTION

Over recent years the international community has become more aware of the economic costs of agricultural protection, the links between domestic support policies and problems of agricultural trade, and of the need to adopt policies that expose producers more fully to market prices (GATT 1986; World Bank 1986; OECD 1987a; Venice Economic Summit 1987). Some policy changes have been made recently in the key developed agricultural trading countries. These include the 6 per cent reduction in rice prices in Japan in 1987, the first reduction in thirty-one years, the reduction of target prices in the United States, announced in December 1987 as part of the budget package agreed to by the Administration and Congress, the budget 'stabilisers' package agreed to by EC heads of government in February 1988 and the recent changes for Japanese beef. While these changes could indicate some first steps towards significant policy adjustment, much more is required if agricultural protection is to be reduced substantially so that comparative advantage can play a more influential role in determining the pattern of trade flows and in enhancing world economic growth and welfare.

At the launching of the Uruguay Round of GATT (General Agreement on Tariffs and Trade) trade negotiations in September 1986 agriculture was given a prominent place on the agenda for the first time in forty years. The prominence given to agriculture reflects recognition that there are potential gains from opening up domestic agricultural (and other) markets to international trade, so that countries can specialise in producing goods in which they have a comparative advantage, and that multilateral approaches to agricultural trade liberalisation are likely to bring the greatest improvements in world markets and lessen domestic adjustment costs (OECD 1987b).

Since July 1987, six major proposals for agricultural reform have been tabled in the Negotiating Group on Agriculture in Geneva (see appendix A). Differences between these proposals indicate that negotiating a comprehensive long term framework for agricultural policy reform will take some time and that it will take perhaps a decade for that framework to be implemented fully. Such a lengthy process would present difficulties for many countries, particularly low cost producers of agricultural products dependent on agricultural trade. Recognising this point, a number of the agricultural negotiating proposals involve action in the short term as part of a multistage process of policy change.

The Cairns Group of food exporting countries (Argentina, Australia, Brazil, Canada, Chile, Colombia, Fiji, Hungary, Indonesia, Malaysia, New Zealand, the Philippines, Thailand and Uruguay) has placed particular emphasis on such 'early action', with the specific objective of negotiating early improvements in the agricultural trading environment (Cairns Group 1988). The Mid-Term Review of the Uruguay Round, scheduled for December 1988 in Montreal, was identified as an appropriate opportunity to achieve substantive interim results in the agricultural negotiations, encompassing reduced support and increased access opportunities for agriculture in 1989 and 1990, an agreement on the management of stocks, and a commitment to the elements of a long term framework for agricultural reform.

Early action is considered to be a 'downpayment' on long term policy change. The precise shape of the downpayment, how it would be linked to the long term reorientation of policy, and what the basic elements of a long term policy framework might be, are left undefined.

This study focuses on the concept of early action and illustrates the policy adjustments that might be required to begin the process of reducing worldwide support for agriculture. The policy packages which are illustrated are based on 1986 policy settings, the latest year for which agricultural assistance data were available. The likely orders of magnitude of the economic effects of partial reductions in agricultural support for temperate zone agricultural products are also estimated by simulation of a world agricultural trade model.

2. EARLY ACTION AND THE URUGUAY ROUND OF MULTILATERAL TRADE NEGOTIATIONS

Various aspects of the negotiating proposals on agriculture so far tabled in Geneva are compared in appendix A. All countries, with the exception of the United States, have acknowledged in their negotiating proposals on agriculture the need for some form of early action in the current Uruguay Round of multilateral trade negotiations. Furthermore, even in the case of the United States, there have been indications that it might be willing to begin implementing long term commitments to changes in agricultural policy as soon as 1989, providing there is agreement on a long term policy framework.

There are areas of common ground among the proposals on early action strategies:

- Timing. The Cairns Group has indicated that early action should commence from the end of 1988 or after provisional agreement on a long term agricultural policy framework, whichever is the sooner. The European Community has broadly similar timing, as have the Nordic countries and Japan. The United States has also stressed the desirability of getting commitments to policy reform by the end of 1988.

- Policy coverage. The majority of proposals accept that all support measures distort agricultural trade, although differences exist on which measures would be targeted for adjustment. The specific targeting of trade distorting policies is broadest in the case of the Cairns Group and the United States, and narrowest in the case of the European Community and Japan. The European Community has proposed, for example, that two-price systems and many income aids for farmers should be allowed to continue, while Japan has proposed that most quantitative restrictions be allowed under certain conditions.

- Commodity coverage. There is similarly broad agreement that commodity coverage should be as wide as possible, though the European Community has signalled that, in any short term policy changes, priority should be given to particular products where structural surpluses already exist or seem likely to develop.

- Aggregate measures of support. A producer subsidy equivalent (PSE) type measure would be used by the Cairns Group to specify the point of departure for, and monitor progress towards, targets for reduced levels of overall support. All other proposals, with the exception of Japan's, advocate the use of a comprehensive aggregate measure of support. However, there is no consensus on exactly how the measure might be used. There are also differences in the extent to which participants envisage producer subsidy equivalent type measures being modified, first, to take account of differences in trade impacts of various policies, second, to allow for the effects of production restraints and, third, to accommodate problems relating to fluctuations in world prices and exchange rates (see appendix B for technical definitions and discussion of aggregate measures of support).

On this evidence, there are grounds for concluding that, in spite of the many differences on detail, a reasonable basis exists for initiating agricultural policy change. However, two major issues remain unresolved. The first is the divergence between the US and EC positions. The US view appears to be that any immediate policy adjustment requires prior agreement on the

elements of a long term policy framework. The United States has not advocated specific early action on agricultural policy. Instead it has maintained the focus on its ambitious proposal for the elimination, over a ten year period, of all import barriers and most agricultural subsidies that directly or indirectly affect trade, and the harmonisation of health and sanitary regulations. The contrary EC view appears to be that early action is a virtually self-contained package and that agreement on a specific long term framework must wait until the general balance of policy changes begins to become apparent across the range of the Uruguay Round agenda.

The second unresolved issue relates to the country coverage of the early action program. The Cairns Group proposal has not differentiated between net importing and net exporting countries. It sees policy adjustments being implemented by all countries, regardless of the level of agricultural protection, although the principle of differential and more favourable treatment for developing countries is identified. This position is based on the view that importing countries, by pursuing restrictive policies, can also distort trade and that the burden of structural adjustment associated with more open markets is significantly reduced, and the benefits much increased, as the number of countries involved in the process rises (OECD 1987b).

Japan and the Nordic countries, on the other hand, place primary emphasis on adjustment by the net food exporting countries where production is being subsidised. In the case of Japan, no specific obligations are envisaged on importing countries. Under the Nordic proposal, importing countries using government funded production incentives would be required only to refrain from introducing new production incentives that might lead to further restrictions on access. The European Community offers a variation on this theme. Its proposal and recent statements (for example, European Community 1988) appear to signal that the Community does not expect to enter into new obligations to reduce assistance in the short term. On the other hand, new obligations could appropriately be imposed on others to 'catch up' with recent EC policy changes, including its so-called 'stabilisers' package (Council of the European Communities 1988a,b).

3. ILLUSTRATIVE PACKAGES FOR EARLY ACTION

For the purpose of illustrating how a package of initial agricultural policy changes could be assembled and what it could imply for policy adjustment, several simplifications have been made. The package is illustrated only for the United States, the European Community and Japan, for a subset of agricultural commodities (dairy, beef, wheat, major feedgrains, rice, sugar, and soybeans), and is built around policy adjustments which would have reduced output assistance for the specified commodities by 10 per cent from the levels applying in 1986. Basic details on the size of, and source of assistance to, these industries are given in table 1. (See appendix C for descriptions of the policy regimes of the countries considered in this section.)

The decision to focus the illustration on the major industrial countries reflects the considerable disruption to agricultural trade caused by their policies, which account for the great bulk of agricultural support provided by the industrial countries in aggregate (OECD 1987b; Blandford 1987).

Table 1: STRUCTURE OF ASSISTANCE 1986(a)

		Grains				Livestock		
Item	Unit	Rice	Wheat	Corn, barley(b)	Soy-beans	Beef	Dairy	Sugar
United States								
Production	Mt	4.3	57.0	210.0	55.0	11.0	65.0	6.0
Producer price	US$/t	122	86	59	171	1 893	278	274
Value	US$m	1 485	9 233	20 386	9 383	20 916	17 637	1 661
Assistance to								
- output	%	95	92	88	20	37	88	90
- other	%	5	8	12	80	63	12	10
European Community 10								
Production	Mt	1.3	66.9	39.0	0.9	7.5	121.0	14.0
Producer price	US$/t	378	201	174	542	3 313	279	368
Value	US$m	472	13 461	6 865	494	24 844	33 707	5 152
Assistance to								
- output	%	99	97	99	99	98	99	99
- other	%	1	3	1	1	2	1	1
Japan								
Production	Mt	11.7	0.9	0.3	0.2	0.6	7.3	0.9
Producer price	US$/t	1 892	1 086	1 225	1 116	9 240(c)	564	1 619
Value	US$m	22 131	1 110	421	576	5 163	4 113	1 401
Assistance to								
- output	%	92	74	86	81	87	86	91
- other	%	8	26	14	19	13	14	9

(a) Exchange rates used to convert local currencies to US dollars are: ECU1 = US$1.07, ¥168.5 = US$1. (b) Corn for the United States, barley for other countries. (c) Wholesale price. na, not available.
Source: ERS (1988).

Table 2: EARLY ACTION POLICY ADJUSTMENTS TO REDUCE AGRICULTURAL SUPPORT BY 10 PER CENT IN 1986

Commodity	United States	European Community	Japan
Wheat	14 per cent cut in deficiency payments through a 6.2 per cent fall in target prices	3 per cent cut in price support and quotas to cut production by 2 per cent	5 per cent cut in producer prices and 32 per cent fall in rice diversion payments
Corn or barley(a)	14 per cent cut in deficiency payments through a 5.3 per cent cut in target prices	3 per cent cut in price support and quotas to cut production by 4 per cent	11 per cent cut in producer prices and increased import access
Rice	18 per cent cut in deficiency payments through a 7.3 per cent cut in target prices	3 per cent cut in price support and quotas to cut production by 3.1 per cent	8.6 per cent cut in producer prices
Sugar	US1.5c/lb cut in loan rate and internal market prices, and increased import access	3 per cent cut in intervention prices and 1.6 per cent cut in 'A' and 'B' quotas	14.1 per cent cut in public funding of sugar beet price stabilisation program, 12 per cent cut in public funding of sugar cane price stabilisation, and increased import access
Soybeans	No significant change	3 per cent cut in oilseed intervention prices and 8 per cent cut in processor production payments	18.2 per cent cut in payments under Paddy Field Reorientation Program
Beef	15 per cent reduction in tariff	3 per cent cut in intervention prices and maximum guaranteed quantities to cut production by 0.4 per cent	6.1 per cent cut in producer prices and increased import access
Dairy	8.5 per cent cut in the tariff equivalent and 4.4 per cent cut in manufacturing milk price	3 per cent cut in intervention prices and quotas to cut production by 1.25 per cent	8.5 per cent cut in producer prices for manufacturing milk

(a) Corn for United States, barley for other countries.

The choice of commodities has been based on their importance in world trade. The selected commodities also collectively account for the bulk of OECD assistance to agriculture on a commodity basis.

The figure of a 10 per cent cutback in output assistance levels for each of the major commodities was chosen because there has been widespread discussion internationally, particularly in an OECD context, of cutbacks of this magnitude (OECD 1987b). Ten per cent annual reductions in support levels are also implicit in the US agricultural negotiating proposal.

The analysis also concentrates on policies which provide direct assistance to output, such as two-price systems, import quotas, tariffs and import levies, and export subsidies, which are arguably the measures most disruptive to trade (see appendix B). Such policies are effectively those which have been classified as constituting the nominal rate of assistance (Industries Assistance Commission 1987) and represent a subset of the range of policies included in the standard producer subsidy equivalent. Assistance to output has accounted for about 80 per cent of the assistance measured by the producer subsidy equivalent for major developed countries over recent years (ERS 1987).

There is one caveat, however. Policies have been developed over time and interact in various ways. Thus the linkages between administered prices and supply control arrangements need to be taken into account as countries adjust the mix of their policies (see appendix D).

Other support policies, such as input subsidies on fuel, fertilisers, storage and transport, expenditure on training, advisory services and structural adjustment, also distort agricultural production and trade to some extent. Furthermore, the extent of distortion from these policies could be expected to increase if, for instance, savings from reductions in deficiency payments were used to bolster input subsidies, thereby negating some of the effects of the initial policy change.

The policy adjustments capable of achieving a notional 10 per cent reduction in assistance to output for major agricultural commodities in 1986 are summarised in table 2. The options that are discussed focus on reducing administered prices so as to narrow the gap between administered and world prices. However, where considered appropriate, there is also discussion of how the same cutback in support levels could have been achieved by manipulating other variables, including production quotas and area reduction programs. The analysis is based on the 1986 producer subsidy equivalent database assembled by the Economic Research Service of the US Department of Agriculture, the latest publicly available comprehensive data set on agricultural support levels.

3.1 United States

(a) Background

US agriculture as a whole is now heavily assisted in absolute terms and also relative to most secondary industries in the United States. In addition to the significant support provided through a range of input subsidies and government funded research and advisory services, there is a dichotomy between policy regimes for industries producing significant proportions of their production for export and others producing essentially to supply the domestic market in competition with imports.

Support for industries with a major export component, including wheat, feed grains, rice and cotton, is provided principally through voluntary programs, and, as summarised in table 3, the main components of these programs are:

- Income support through deficiency payments, which constitute the difference between an administratively determined target price and the higher of either the market price or the loan rate.

- Market price support through the loan rate, which is the price at which producers can choose to forfeit their production to government stocks, having first been given a loan by the government at the loan rate.

- Supply control through area reduction programs, under which growers divert a proportion of a base area from production in order to be eligible for deficiency payments and other program benefits. These diversions are sometimes supplemented by paid acreage diversions.

- Rundown of accumulated government stocks through a certificate program, under which certain program benefits are paid by negotiable certificates backed by government stocks, and, since 1985, through the Export Enhancement Program under which bonuses from Commodity Credit Corporation stocks are made to reduce prices of exports to specific markets. In addition, a so-called 'marketing loan' rate was applied for rice and cotton in 1986, allowing growers effectively to repay Commodity Credit Corporation loans at the market price rather than at the loan rate.

The trade effects of these measures are the net result of production stimulation through deficiency payments, export enhancement and certificate arrangements and restraint through area diversions. For most major crop export industries, international market prices fell sharply following enactment of the 1985 Food Security Act, as a result of reductions in loan rates, the introduction of the certificate programs, marketing loans and continuation of the Export Enhancement Program. As target prices were initially maintained, and subsequently reduced only slowly, government support increased markedly.

Support for major import competing industries is provided mainly through import quotas and other access restrictions. The sugar and dairy industries are heavily protected by import quotas set at levels sufficient to maintain domestic support prices, which are normally substantially above world prices. For sugar, assistance to output is entirely from price supports through loan rates (currently US18c per lb) and a stabilisation price set somewhat above this to allow profitable processing. Domestic prices are supported by import quotas, and prices are designed to be sufficiently profitable to prevent a significant proportion of production being forfeited to the Commodity Credit Corporation, thereby avoiding the imposition of a budgetary cost on government. The dairy industry is supported through import quotas on dairy products, government support prices for manufacturing milk and Commodity Credit Corporation purchase of dairy products, and a system of marketing orders for market milk. Special levies have been deducted from milk prices at times to prevent stock accumulation. In 1986 there was a government buy-out of cattle to limit production.

The US beef industry is assisted with export promotion, relatively low import tariffs (US2c/lb) and a countercyclical import law under which quota limits can be placed on imports. At times when the quota limits have been

Table 3: SOURCES OF PRODUCER SUPPORT 1982-84

Commodity	Japan	European Community	United States
Grains	State trading.	Price supports maintained by intervention purchases; variable levy; export refunds.	Deficiency payments; payment-in-kind entitlements; Commodity Credit Corporation inventory operatons and commodity loans.
Oilseeds	Deficiency payments.	Deficiency payments.	Commodity Credit Corporation inventory operations and commodity loans.
Dairy	Price supports through government stockholding and trade barriers; some deficiency payments.	Price supports maintained by intervention purchases; variable import levies; export levies.	Price supports maintained by tariffs, quotas, and government purchases.
Livestock	Beef: quotas, tariff, domestic price stabilisation. Pork: variable levy. Poultry: tariff.	Price supports maintained by intervention purchases; variable import levies; Export refunds.	Beef: tariff. Other: general (research and development, inspection and so on).
Sugar	Price stabilisation; import levy.	Price supports maintained by intervention purchases; variable import levies; export refunds; production quotas.	Price supports; import quotas.

Source: Moore (1987).

likely to be breached the US government has usually arranged bilateral voluntary export restraint agreements from suppliers. Thus, although those limits have not been reached in most years, the existence of the law and associated voluntary restraints on export by supplying countries has provided significant support to the US beef industry and has been a source of world market disruption when US production was high.

The main pressures for reform of US policies have come from the considerable budgetary cost of present policies and the perception that large program payments are directed mostly to large producers, many of whom are efficient, in little need of support and also tend to be the most responsive in their production decisions to high program support prices (Council of Economic Advisors 1987).

An important institutional factor that could influence the future direction of US policy is the separation of powers between the Administration and the Congress. Reforms advanced by the Administration have been aimed principally at reducing target prices and decoupling program payments from price and other program incentives. In addition, the Administration has advanced an ambitious proposal for liberalisation in the Uruguay Round of GATT trade negotiations. But any agreement will have to be approved by Congress. Farm policy in the United States is principally under omnibus legislation passed every four or five years. Present policy is largely under the auspices of the 1985 Food Security Act which extends until 1990. Unless this legislation is amended in the next year or so, it would appear that any early action would have to be consistent with present legislation and would have to emphasise actions within the authority of the Secretary for Agriculture under that legislation.

(b) A possible early action approach

The fundamental adjustment to achieve a greater degree of trade liberalisation for the major export crops would be to reduce target prices toward market prices, thereby reducing deficiency payments. Loan rates would need to be set sufficiently low to prevent forfeitures to the Commodity Credit Corporation and further excessive stock accumulation. In addition, any adjustments in area reduction programs would need to be coordinated closely with reductions in deficiency payments to prevent production from rising above levels that would have applied without the policy changes. For example, there may be little scope to relax existing 'set-aside' requirements if they insufficiently offset the output stimulating effects of present US target prices (see appendix D).

It is estimated that in 1986 a 10 per cent reduction in output assistance would have required a 14 per cent reduction in deficiency payments for both wheat and corn, and an 18 per cent reduction for rice. This could have been achieved by a 6.2 per cent reduction in the target price for wheat, from US$4.38/bushel to US$4.11/bushel. For corn, the reductions in target price would have been 5.3 per cent, from US$3.03/bushel to US$2.87/bushel, and for rice 7.3 per cent, from US$11.90/bushel to US$11.03/bushel.

Support levels for soybeans have been negligible. To achieve a 10 per cent reduction in assistance to output in 1986 would have required the loan rate to be reduced by less than US1c/bushel from its level in that year of US$4.77/bushel.

For major import competing products, internal support prices need to be reduced toward world prices and access to the US market increased.

For sugar, reduced loan rates and stabilisation prices and relaxed import quotas would lower prices toward world market levels, reducing the incentive to increase US sugar production and the production and use of sugar substitutes, as well as reducing the inducement of large forfeitures and stock accumulation. It is estimated that in 1986 a 10 per cent reduction in output assistance would have required a reduction in the loan rate and internal US market price of about 1.5 USc/lb in conjunction with an increase in access that was consistent with the effects of such a reduction.

To reduce assistance to the highly protected US dairy industry, internal milk and dairy product prices could be brought closer to import parity prices by determining the tariff equivalents of present dairy product

quotas, replacing the quotas by import tariffs and then implementing reductions in the tariffs. At the same time, internal support prices would need to be reduced in line with the reductions in the tariffs. Using 1986 as the example, it is estimated that the tariff equivalent of output assistance for milk was 85 per cent, although support to different products varied. A reduction of 10 per cent in support would have entailed a decline in the manufacturing milk price of 4.4 per cent from US$12.51 per 100 lb to an estimated US$11.96 per 100 lb, under the assumption that all levies applying in 1986 were maintained.

An alternative approach, similar to that suggested for sugar, could be pursued. The support price for milk could be reduced by the amount suggested above. Import quotas for dairy products would be increased to provide the additional quantities demanded at the lower prices and to compensate for the effects of lower US milk prices on domestic production. This alternative approach involves many of the same administrative and technical complexities that would apply in calculating the tariff equivalents of output assistance and then negotiating tariff reductions. However, the advantage of the tariff equivalent approach is that it could be linked readily to a phased program of import liberalisation. The import quota approach, on the other hand, would present more difficultires because quotas tend to be less flexible than tariffs - a fact compounded for dairy by the range and diversity of dairy products, compared, for example, with sugar.

For beef, special problems arise in determining a strategy for liberalising US policies, as the main vehicle for support - restraints on imports in times of high US production under the US Meat Import Law - acts through the threat of triggering quotas (see appendix C), and so is not captured in the aggregate measure of assistance used here. In the longer term, a more liberal US beef policy regime could be achieved by phasing out the Targeted Export Assistance Program and, if desired, implementing an industry funded promotion program, modifying the Meat Import Law to allow greater access of beef, initially by increasing the base import quota level and eventually by repealing the law, and reducing tariffs on beef imports. In the context of early action, however, a 10 per cent reduction in the measured assistance to output of beef and veal in 1986 could have been achieved by reducing tariffs on US imports by 15 per cent.

3.2 European Community

(a) Background

The Common Agricultural Policy established in the 1960s is enshrined in Article 39 of the Treaty of Rome. This crucial Article, which embraces both economic and social policy objectives, has resulted in the development of a system of support based on high levels of domestic price supports, import protection and an elaborate export subsidy system for a wide range of mainly temperate farm products (see appendix C).

EC domestic price supports are based essentially on indicative target prices established at levels generally higher than world prices. Minimum prices are maintained in the main through intervention purchasing arrangements at prices linked to target levels. Such intervention guarantees are largely open-ended with little or no quantity limitation for most products, although recently some seasonal and quality restraints have been imposed.

Variable import levies are applied at levels designed to ensure that effective import prices do not undercut prevailing EC farm commodity prices. They are established at levels which bridge the difference between predetermined minimum support prices and the lowest cif (cost including freight) offer prices by non-EC exporters, and so effectively preclude substantial imports of key temperate farm produce. Such import levies do not apply to oilseeds or most other non-grain oilseed materials, because of low or zero GATT binding commitments entered into by the European Community in the Dillon Round of multilateral trade negotiations in the early 1960s.

EC exports are subsidised by refunds or restitutions which are supposed to bridge the gap between representative EC internal prices and those prevailing on world markets. Relevant EC regulations, however, allow a discretionary element in determination of such payments to account for wider economic or market considerations. In practice these are decided by a combination of tenders and administratively determined price subsidies to enable the European Community to compete on third markets. Export payments can vary according to destination.

In addition to these and other internal and external assistance mechanisms, EC agricultural industries benefit from diverse national supports including capital grants or taxation concessions which vary in extent between member states. In some cases national supports equal between 50 and 100 per cent of Common Agricultural Policy assistance measures.

Some agricultural and food processing industries also receive production grants based on the assessed price differentials between domestic EC and world market prices for agricultural raw materials. Their purpose is to compensate EC processors for higher priced EC farm produce prices and to enable them to remain competitive with processors in countries with lower agricultural prices.

High and rising price supports in the Community have encouraged rapid growth in agricultural production over recent decades. This production effect has been reflected in the expansion of EC exports, the accumulation of large surplus stocks and marked growth in annual EC budgets, agricultural expenditure being the major element in the perennial EC budget problems.

In February 1988 the European Community agreed on the introduction of 'agricultural stabilisers' for a range of grains products. These stabiliser measures are based on maximum guaranteed quantities or guarantee thresholds, beyond which support levels on production in excess of threshold levels are reduced. The major purpose of the stabiliser package is to limit the growth of expenditures on agriculture by limiting production incentives. The stabiliser package also represents a further departure from open-ended intervention guarantees and is to be supplemented by 'set-aside', early retirement, and direct income payment schemes subject to set criteria. The full impact of the guarantee threshold approach is a subject of speculation at this juncture since it has not yet been fully implemented. Initial assessment indicates that there are a number of weaknesses in the agreed system. The maximum guaranteed quantities levels largely consolidate present production levels and overproduction penalties are unlikely to be a significant limitation on production.

(b) A possible early action approach

The EC proposal on agricultural reform in the Uruguay Round stresses the need for a more market oriented agriculture, but with each negotiating party

retaining the freedom to choose the means of reform by a phased reduction in supports. However, recent EC internal negotiations in the context of annual price reviews and the agricultural stabiliser exercise indicate only a limited willingness to take direct price action.

The European Community's GATT proposal, and the broad principles presented in the agricultural stabiliser program and earlier Commission reform exercises (for example, Commission of the European Communities 1985), indicate that the Community might be willing to reduce assistance with a policy mix based on:

- limited restrictions on prices;
- the selective use of production quotas;
- wider use of industry co-responsibility levies;
- maximum guaranteed quantities and more flexible intervention systems, with production support penalties if maximum guaranteed quantities are exceeded.

A combination of limited price restraints and quotas can meet the aggregate assistance reduction objective being illustrated in this study, while effectively limiting production as a medium term strategy. This approach, though far from satisfactory in economic terms, would improve resource allocation on an interim basis compared with present Common Agricultural Policy operations.

The Commission has put forward a nominal price freeze in the 1988-89 price proposals. However, in the context of the Uruguay Round and with agreed internal stabilisers arrangements, a 3 per cent reduction in nominal price support levels across commodities would appear reasonable. This assessment is made on the grounds that a 3 per cent fall is not markedly different from the Commission's own proposal and is the same order of magnitude of support price penalties as agreed in the stabilisers package for cereals. It is also assumed that the Community's system of agricultural exchange rates is not adjusted to offset price changes.

While having some marginal farm level impact, such limited price reductions would be unlikely to significantly reduce aggregate production or export activity in the short term and would not meet the aggregate assistance reduction objective. Appropriate adjustments in variable import levies and direct supply controls would also be necessary.

Quotas have proven to be the only successful supply limitation in the European Community in recent years, as shown in the cases of dairy and sugar. Thus production quotas in conjunction with price restraint have a potential role in early action policy changes, provided overquota production is suitably penalised and administered to restrain supply. Overquota penalties could be effective if import parity prices were applied to production above quota. Increases in domestic price supports are precluded by the 3 per cent reduction element of the early action package and would not, therefore, provide a loophole allowing profitable overquota production through price averaging.

A 10 per cent reduction in output assistance would have been achieved in 1986 by a combination of a 3 per cent reduction in price support and administered production decreases of 2 per cent for wheat, 4 per cent for

barley, 3.1 per cent for rice, 1.6 per cent for sugar (A and B quota), and 1.25 per cent for dairy.

In the case of beef the application of production quotas is perceived to be impractical due to the large number of sale outlets and the difficulty of controlling cattle numbers at the farm level. In these circumstances a short term strategy could combine a 3 per cent price reduction with an effective maximum guaranteed quantity (liveweight equivalent). The target assistance reduction could have been achieved if maximum guaranteed quantities were set to ensure a 0.4 per cent supply reduction in 1986.

For oilseeds, the assistance targets could have been achieved with a 3 per cent reduction in intervention prices and 8 per cent reduction in processor production payments. This would avoid the need for quotas on a product that the Community imports and that has low import duties already bound in GATT.

3.3 Japan

(a) Background

Successive Japanese governments have heavily protected agriculture. For a number of important agricultural commodities, including rice, wheat and beef, quasi-governmental agencies have been given monopoly power over imports which enables them to maintain domestic prices well above import parity. For example, in the last few years farmers have sold rice, a commodity which accounts for about 30 per cent of the value of gross agricultural output, at prices eight to ten times international prices. Furthermore, the wide use of quantitative restrictions on agricultural imports has meant that the benefits of the yen's appreciation of the last three years have not been passed on to consumers. Besides quantitative restrictions, other border measures used include tariffs, which are not particularly important, and health regulations, which are important for some horticultural products.

The burden of supporting agriculture is being increasingly transferred from taxpayers to consumers. Between 1975 and 1986, agriculture's share of the budget fell from 12 per cent to 7 per cent, while the nominal rate of protection increased from 76 per cent to 210 per cent. Shifting the burden of support from taxpayers to consumers has reduced the transparency of government intervention (see appendix B), while the increase in protection has further distorted resource use in the Japanese economy.

Input subsidies are extensive in number but are relatively insignificant compared with the support provided through output prices. They have mostly taken the forms of low interest loans for capital improvements or subsidies on marketing costs.

For a number of commodities, including rice and wheat, cost of production surveys are used to set the prices received by producers. There are a number of theoretical and practical difficulties associated with this approach. For example, the usefulness of utilising average cost data is questionable when decisions by farmers are likely to be made on the basis of marginal costs and there are differences in seasonal conditions. However, the most serious limitation of the use of cost of production surveys to set prices is that the price signals which producers receive are not influenced

by consumer demand. This can result in inefficient resource allocation because producers are not provided with correct market signals.

For a number of important commodities such as dairy products and rice, production quotas effectively dictate what individual farmers can produce. The quotas do not always have a legislative basis and are administered by the agricultural cooperatives - a group firmly committed to maintaining existing policies. Continued government support of agriculture and the maintenance of restrictions on imports are argued for by the cooperatives whenever there is debate about the course of agricultural policy in Japan (Higashi and Lauter 1987; Japan International Agricultural Council 1987). One glaring example of the distortion in resource use resulting from high agricultural protection is the high proportion (about 40 per cent) of farms with a cultivated area of less than 0.5 ha. These small farms owe their continued existence to the high prices provided to Japanese farmers through government policies. Farmers are a major element in the political support base for the ruling Liberal Democratic Party.

However, there have been a number of recent developments which suggest the political influence of the rural sector may be beginning to weaken. First, because food processors are forced to pay high prices for their agricultural inputs, they are well informed about the costs and distributional consequences of Japanese agricultural policies. This has led to pressure being placed on the government by the food processing sector for greater liberalisation of agriculture. Second, the declining rural population has meant that the farming electorate is no longer as attractive to political strategists (Shibayama 1988). Third, consumers are becoming increasingly concerned that they are not receiving benefits from the appreciation of the yen in the form of lower food prices. As they gain more information as to the regressive nature of the present set of policies and the loss in income the economy has suffered, pressure from consumers for change will intensify.

Each of these factors suggests that the political questioning of the favoured treatment Japanese farmers now enjoy will be less muted than in the past, although at this stage it is not of sufficient strength to cause a major reversal of Japanese policies. The fact that there is this disquiet, however, indicates that some changes are possible.

(b) A possible early action approach

While it is apparent from the discussion in appendix C of the policies for the various commodities that Japanese policy involves a complicated array of measures, nonetheless there are some common threads, which simplifies the design of reform measures.

First, the prices which farmers receive for the commodities under consideration are well above import parity. Hence the first step to reduce aggregate support is to reduce producer prices closer to world prices. Reductions of 11 per cent and 8.6 per cent in the producer prices of barley and rice would have reduced the output assistance to these two commodities by 10 per cent in 1986. Similarly, a 10 per cent reduction in output assistance for milk could have been achieved by reducing the producer price of milk by 8.5 per cent.

Second, for some products, for example beef and sugar, the government operates price stabilisation schemes, where prices are maintained within bands which are usually above international prices. The objective of these

arrangements is to reduce price variability and to support the incomes of farmers. Besides receiving direct taxpayer support, these programs are also partly funded by levies and taxes on imports. A 14.1 per cent reduction in the public underwriting of the sugar beet price stabilisation program, and a 12 per cent reduction in the public support of the sugar cane price stabilisation program would have reduced the output assistance for sugar by 10 per cent in 1986. Reducing public support of the beef price stabilisation scheme by 6.1 per cent would have achieved a 10 per cent reduction for beef.

Third, the government, through the various quasi-governmental agencies, exercises tight control over imports. Hence, at the same time as farmers' returns are lowered, import restrictions should be relaxed to enable imports to increase. Otherwise the price reductions required to reduce the assistance may not eventuate. This is likely to be particularly important for beef, where consumer demand is strong, and for the sugar industry, where increased imports are necessary to put pressure on the high fructose corn syrup industry.

Fourth, the policy mix in Japan can give rise to outcomes which are inconsistent with the objective of the policy. For example, programs have been introduced to reduce the area of rice. Yet farmers, by moving in and out of rice, have been able to receive the diversion payments from this scheme, thereby supplementing assistance from already high producer prices. In order to make policy transfers more transparent, and also more predictable, the diversion program could be reduced or removed simultaneously, as a means of reducing support. According to Mori (no date), there is a tacit agreement between the agricultural cooperatives and the government that subsidies for reducing rice areas will be phased out. While reducing payments under the diversion program by 18.2 per cent was all that would have been needed to reduce the output assistance for soybeans by 10 per cent in 1986, it would have needed a 32 per cent reduction in the funds available for converting rice land to wheat production, supplemented by a 5 per cent reduction in the producer price of wheat, to have achieved a 10 per cent reduction in the output assistance for wheat in 1986.

The various policies which have been outlined are designed to move away from the present high levels of support towards a system where market forces become more influential in determining the prices paid by consumers and received by producers. Linked to this is the need for increased access to the Japanese market by potential foreign suppliers. Most of the support to producers is provided by supporting producer prices at high levels by means of direct budgetary outlays or, more commonly, government controls over imports. These import controls effectively represent a tax on consumers. Thus reducing prices and increasing access to imports represent the most desirable and, in fact, the only realistic avenue available to Japan to reduce output assistance to its agricultural industries.

4. SOME ECONOMIC IMPLICATIONS OF EARLY ACTION

Some of the potential impacts of a partial liberalisation of agricultural trade are analysed in this section. The analysis relies on a world agricultural trade model which is used to simulate cuts in assistance equivalent to the 10 per cent reduction in assistance to output considered above. Reductions in assistance equivalent to 20 and 30 per cent of output assistance, along with the removal of all support, are also simulated. However, the model includes more countries and commodities than those used for illustrative purposes in developing the policy packages in the previous section. In addition, the simulations cover a general reduction in assistance rather than only the specific policy proposals developed in the previous section. The model includes only some of the important parameters which might influence agricultural production, consumption and trade. Consequently, the results obtained in the analysis should not be viewed as forecasts of specific future outcomes under the differing policy regimes analysed. The model results do, however, provide an indication of many of the important interactions and changes which might arise from a cut in assistance to agriculture.

4.1 Modelling Framework

The model was built using the static world policy simulation (SWOPSIM) modelling framework developed by Roningen (1986). This framework provides for models to be created with economic structures that include constant elasticity supply and demand equations. Policy changes, such as changing the level of protection, can be imposed via measures of subsidy equivalents. The models are non-spatial and trade is determined as the difference between supply and demand for each commodity. The models are solved iteratively by determining a set of prices which equilibrate world net trade for each commodity (see Roningen 1986 and Dixit and Roningen 1986 for a detailed description of the SWOPSIM framework).

The 12 region, 22 commodity model used in this analysis is an aggregated version of the basic 36 region, 22 commodity trade model developed in the Economic Research Service of the US Department of Agriculture. The 12 countries or country groupings in the model are the United States (US), the European Community (EC), Japan (JP), and other countries aggregated into groups according to their geographic location and agricultural trade status. There are four exporting regions: the developed Cairns Group exporters, Australia, Canada and New Zealand (DX); developing Cairns Group members (CX); other Western Europe (WX); and other exporters (OX). The importers are categorised as East Asia (EM); Africa (AM); Latin American importers (LM); and other importers (OM). A detailed list of the countries in each group is shown in table 4. A residual group contains the centrally planned economy countries. The simulations undertaken do not allow for policy changes in these residual countries so any effects on them are not examined here.

The model includes twenty-two commodities. Some are raw agricultural commodities and others are processed or partly processed, such as soybean meal and cheese. Some commodities, like corn and coarse grains, are inputs into livestock sectors. For the relevant grain and oilseed products, feed demand is specified to be a function of livestock production. Livestock dynamics can take a considerable time to work through. Thus the model structure is likely to provide overestimates (or underestimates) of feed demand, and of total grain demand, when livestock industries are contracting (or expanding) as they move towards new long run equilibria.

Table 4: COUNTRY AND COMMODITY GROUPINGS IN MODEL

Country or group		Commodity or commodity group	
US	United States	BF	Beef and veal
EC	European Community 12	PK	Pork
JP	Japan	ML	Mutton and lamb
DX	Developed Cairns Group exporters: Australia, Canada, New Zealand	PM	Poultry meat
		PE	Poultry eggs
CX	Developing Cairns Group exporters: Brazil, Argentina, Indonesia, Thailand, Malaysia, Philippines	DM	Dairy fresh milk
		DB	Dairy butter
		DC	Dairy cheese
WX	Other Western Europe	DP	Dairy milk powder
OX	Other exporters: Central America and Caribbean, other South-East Asia	WH	Wheat
		CN	Corn
EM	East Asian importers: South Korea, Taiwan, other East Asia	CG	Other coarse grains
		RI	Rice
AM	African importers: Nigeria, other Subsaharan Africa, Egypt, Middle East and North Africa, South Africa	SB	Soybeans
		SM	Soybean meal
		SO	Soybean oil
LM	Latin American importers: Mexico, Venezuela, other Latin America	OS	Other oilseeds
		OM	Other meals
OM	Other importers: India, other Asia	OO	Other oils
RW	Rest of the world: Eastern Europe, USSR, China, the rest of the world	CT	Cotton
		SU	Sugar
		TB	Tobacco

The SWOPSIM model structure does not allow for stocks, the implication being that stocks of commodities are assumed to remain constant under alternative simulations. As the model framework is static and non-spatial, the model cannot provide information on either the time path and the process of adjustment or on regional trade flows. It is assumed that a country could export a commodity to or import it from any other country regardless of differences in transport costs. In reality, however, there are regional markets and differentiated products which have an important bearing on trade flows. Therefore, no definite conclusions can be drawn from the model results about the specific destinations for or sources of a country's traded commodities. The welfare indicators do not reflect the influence of these factors.

The net trade specification means that countries are either net importers or net exporters of particular commodities. Thus cases of countries importing and exporting the same generic commodity are ignored. In many of the cases where such two-directional trade occurs, there are likely to be quality differences between the imported and exported products so they will not be perfect substitutes. For instance, the European Community imports durum wheat, used for making pasta products, and exports soft wheats, which can be used for a variety of purposes including animal feed. The implication of the netting out of such trade in the model framework is that the welfare changes arising from trade liberalisation may be understated.

Despite this limitation, the model does allow a country to switch from being a net exporter of a given commodity to being a net importer depending

on the elasticities and level of the price changes. However, there is no automatic change in the transport costs included in the standard margins relationships. This means that when a country switches between net exports in the ex post case to net imports with liberalisation the imports are valued at the same price as exports. Consequently, when a country does switch its net trade, the welfare indicators will not show the change in transport costs involved. Nevertheless, such switching of trade status is not a significant feature of the 10 per cent partial liberalisations simulated here, which are the main focus of the present analysis and of the proposals for early policy action in the context of the Uruguay Round.

Three sets of information are required to implement a model and to analyse agricultural policy changes within the SWOPSIM framework. For each country or country grouping and commodity included, the information needs are: first, data on production, consumption and net trade and associated world and domestic prices; second, information on support policies; and, third, an elasticity matrix.

The quantity and price data on which the reference solution is initialised are taken from the world agricultural database maintained by the Foreign Agricultural Service of the US Department of Agriculture. The price and quantity data used here are for 1986 (or 1986-87 where split years are relevant). However, as the estimates of the assistance to agriculture for 1986 have not been finalised yet, a 1984 support data set is used in these simulations. Agricultural support was generally higher in most countries in 1986 than in 1984 (Blandford 1987; ERS 1988). As a consequence, it is likely that the results from these simulations will understate the effects of reducing assistance to output by 10 per cent from 1986 levels.

Policies are introduced into the model by allowing world, domestic producer and domestic consumer prices all to diverge. Differences in world and domestic prices are based on marketing margins, exchange rates, world price transmission elasticities and a constant. Policies which affect producers, consumers, exports and imports can be entered as price margins which force a wedge between producer, consumer and trade prices. SWOPSIM generated models utilise the subsidy equivalent method to enter the support policies into the model (see appendix B). These subsidy equivalents, expressed as dollars per tonne, are introduced into the model in ways that are designed to capture the effects on consumers, taxpayers, exports and imports as well as on producers. For instance, where producer support is provided by a deficiency payments scheme, the model will contain a producer price wedge and there will be allowance for the budgetary costs involved, but, subject to the standard margins relationships, consumer prices will reflect world prices. Where assistance is provided through an import tariff, an import price wedge will appear, and, through the margins relationships in the model, will affect both producer and consumer prices.

The simulations of reductions in assistance to agriculture take account of the structure of support in each case. This is done by making equal proportionate reductions in the absolute levels of the price wedges that apply in each case. If the assistance is through a tariff, for example, a reduction in the level of the tariff will reduce both producer and consumer prices. If a deficiency payment is to be reduced, the producer price will fall as also will the simulated budgetary cost of the assistance. Despite the reductions in assistance being modelled, producer prices can increase following a reduction in support even where the levels of assistance are very high. This occurs because, in absolute terms, an increase in the relevant world price may exceed the reduction in the level of assistance.

Table 5: OWN PRICE ELASTICITIES OF DEMAND(a)(b)

Commodity	EC	JP	US	Exporters DX	CX	WX	OX	Importers EM	AM	LM	OM
Beef	0.70	1.10	0.93	0.81	0.72	0.76	0.80	0.72	0.54	0.92	0.20
Pork	0.77	0.95	0.86	0.89	0.85	0.60	1.10	0.62	0.24	1.15	0.20
Mutton and lamb	0.95	0.25	0.70	1.28	0.79	0.47	0.50	0.52	0.52	0.51	0.50
Chicken	0.88	1.10	0.56	0.71	0.78	0.65	0.90	0.66	0.45	0.98	0.30
Eggs	0.20	0.20	0.35	0.20	0.50	0.20	0.50	0.32	0.34	0.35	1.00
Milk	0.21	0.50	0.31	0.36	0.70	0.20	0.60		0.37	0.47	0.75
Butter	0.43	0.54	0.63	0.57	0.80	0.45			0.32	0.92	0.80
Cheese	0.40	0.80	0.55	0.67	0.84	0.48			0.30	0.43	0.80
Non-fat milk powder	0.39	0.63	0.75	0.41	0.88	0.40			0.30	0.38	0.90
Wheat	0.28	0.36	0.35	0.20	0.47	0.35	0.40	0.49	0.18	0.30	0.32
Corn	0.44	0.45	0.21	0.22	0.47	0.75	0.30	0.48	0.28	0.36	0.60
Other coarse grains	0.35	0.55	0.47	0.25	0.48	0.35	0.32	0.84	0.27	0.34	0.60
Rice	0.47	0.30	0.25	0.31	0.34	0.44	0.37	0.21	0.21	0.38	0.50
Soybeans	0.52	0.60	1.10	0.85	0.55	0.20	0.99	0.67	0.30	0.76	0.07
Soybean meal	0.37	0.35	0.31	0.42	1.19	0.55	0.60	0.76	0.38	0.82	0.18
Soybean oil	0.57	0.47	0.37	0.53	1.00	0.45	0.90	0.86	0.14	1.18	0.56
Other oilseeds	0.60	0.60	0.74	0.53	0.62	0.20	0.89	0.74	0.22	0.47	0.06
Other meals	0.68	0.75	0.90	0.81	1.21	0.55	0.65	1.01	0.35	1.34	0.18
Other oils	0.57	0.35	0.69	0.70	0.88	0.55	0.71	0.95	0.19	1.06	0.50
Cotton	0.51	0.30	0.20	0.23	0.51	0.20	0.50	0.43	0.36	0.38	0.61
Sugar	0.48	0.60	0.24	0.24	0.68	0.29	0.32	0.80	0.16	0.44	0.59
Tobacco	0.46	0.50	0.20	0.31	0.40	0.50	0.45	0.45	0.21	0.20	0.75

(a) Absolute values. (b) See table 4 for countries included in each grouping.
Source: Economic Research Service, US Department of Agriculture.

Table 6: OWN PRICE ELASTICITIES OF SUPPLY(a)

Commodity	EC	JP	US	Exporters DX	CX	WX	OX	Importers EM	AM	LM	OM
Beef	0.60	0.51	0.70	0.52	0.50	0.57	0.40	0.50	0.38	0.39	0.20
Pork	0.84	0.90	0.74	0.75	0.57	0.80	0.60	0.64	0.26	0.58	0.20
Mutton and lamb	0.69	0.70	0.90	0.73	0.42	0.70	0.40	0.47	0.49	0.50	0.35
Chicken	0.78	1.30	0.65	0.80	0.59	0.75	0.50	0.55	0.65	0.59	0.40
Eggs	0.74	1.00	0.50	0.53	0.49	0.75	0.50	0.61	0.44	0.63	0.40
Milk	0.65	0.70	0.50	0.52	0.48	0.60	0.35		0.40	0.39	0.30
Butter	0.29	0.35	0.50	0.42	0.52	0.26			0.18	0.42	0.12
Cheese	0.55	2.20	0.40	0.73	0.51	0.40			0.16	0.34	0.30
Non-fat milk powder	0.29	0.35	0.50	0.44	0.52	0.26			0.18	0.42	0.12
Wheat	0.52	0.52	0.60	0.62	0.52	0.83	0.41	0.43	0.32	0.49	0.44
Corn	0.61	0.30	0.48	0.25	0.43	0.60	0.26	0.45	0.40	0.51	0.56
Other coarse grains	0.57	0.55	0.60	0.73	0.77	0.45	0.30	0.42	0.39	0.78	0.50
Rice	0.40	0.50	0.40	0.40	0.32	0.20	0.34	0.31	0.22	0.61	0.40
Soybeans	0.40	0.70	0.60	0.36	0.61	0.60	0.34	0.30	0.24	0.53	0.30
Soybean meal											
Soybean oil											
Other oilseeds	0.90	0.90	0.55	1.13	0.51	0.20	0.34	0.35	0.18	0.56	0.35
Other meals											
Other oils											
Cotton	0.24		0.74	0.20	0.82	0.20	0.69	0.17	0.38	0.41	0.69
Sugar	0.17	0.70	0.50	0.50	0.53	0.45	0.31	0.15	0.20	0.26	0.49
Tobacco	0.20	0.20	0.25	0.20	0.27	0.20	0.26	0.40	0.23	0.14	0.23

(a) See table 2 for countries included in each grouping.
Source: Economic Research Service, US Department of Agriculture.

The elasticity matrices for each country (tables 5 and 6) have been compiled and developed by the Economic Research Service from the available literature and it is considered that they reflect medium term responses over about five years (V.O. Roningen, Economic Research Service, personal communication, February 1988). Since the elasticities used in the model have not been obtained from a direct estimation of the full system, it is necessary to assess whether they represent partial or more general equilibrium responses so that the simulation results can be interpreted correctly. The distinction is important because, on the supply side, there will be constraints to agricultural supply when all sectors within agriculture are liberalised at the same time. For instance, with a fixed quantity of land, commodities which use land intensively must be constrained in their output response to a price change which affects them all. Partial elasticities are therefore likely to overstate the production response both in aggregate and for many individual commodities where across-the-board changes in prices are being assessed. This means that the welfare and trade impacts are also likely to be overstated. There are also constraints to the possible aggregate and individual commodity demand responses in similar circumstances. The latter constraints would be due to budget constraints and limits on the increased quantities that can be consumed, particularly by wealthier people.

The aggregated demand and supply elasticities for the commodities in the model, for Australia and the key developed agricultural trading countries- the European Community, Japan and the United States - are shown in table 7. The Economic Research Service elasticities indicate quite plausible and inelastic aggregate responses for these countries. Note that the aggregate supply elasticity for Japan is higher than for the other countries shown. This is consistent with the fact that Japanese agriculture is relatively intensive in the use of non-land inputs such as imported feed grains.

A comparison of a limited set of the elasticities in table 7 with parameters obtained from systems estimations and used in a general equilibrium model also indicates the Economic Research Service elasticities are not inconsistent with their being interpreted as general equilibrium elasticities (J. Sharples, Economic Research Service, personal communication May 1988). For instance, the aggregate US demand elasticity of -0.34 in the model is very similar to the aggregate elasticity of -0.29 derived for a similar range of products from estimates for the United States published by George and King (1971).

Table 7: SELECTED AGGREGATE ELASTICITIES

Country or country group	Demand	Supply
Australia	-0.33	0.36(a)
European Community	-0.34	0.30
Japan	-0.42	0.43
United States	-0.34	0.31

(a) Includes wool.
Source: Economic Research Service, US Department of Agriculture.

The aggregate Australian supply elasticity of 0.36 is lower than the medium run elasticity of 0.69 (for wool, sheep meat, beef and cereals) obtained from a regional programming model (Hall, Fraser and Purtill 1988) in which land supply is constrained explicitly. However, the aggregate supply elasticity for Australia used in the Economic Research Service system is somewhat higher than the 0.22 (five year response) elasticity derived from an econometric model of broadacre Australian agriculture (Martin and Shaw 1986). Finally, data in Higgs (1986) indicate that a simultaneous 1 per cent change in the export prices for each of five major commodity groups, accounting for 70 per cent of agricultural output over 1979-80 to 1980-81, would raise total production by 0.34 per cent. This response would approximate a general equilibrium supply elasticity and is very close to the figure used by the Economic Research Service. The inference from these comparisons is that, where comparisons have been possible, the evidence indicates that use of the Economic Research Service elasticities should not result in overstatements of the impacts of trade liberalisation.

4.2 Policy Experiments

Three alternative partial liberalisation scenarios were simulated: a multilateral liberalisation in which all countries, other than the centrally planned economy countries, liberalise (world model 1 - WM1); one in which only the European Community, Japan and the United States liberalise (WM2); and a liberalisation restricted to country groupings other than the three major economies but excluding the centrally planned economies (WM3). Although most countries tend to protect their agricultural sectors, the policies in some countries have the effect of taxing producers of particular commodities. Where this occurs, equivalent reductions in the taxes are simulated. These three scenarios provide an opportunity to examine the potential benefits of a multilateral reduction in agricultural assistance compared with reductions in assistance by different groups of countries.

The all-country liberalisation (WM1) provides a benchmark for this comparison. Since liberalisation is restricted to a reduction in assistance equivalent to 10 per cent of output assistance, WM1 potentially offers some insights into what a small reduction in protection might yield, relative to the more common total liberalisation simulations (Anderson and Tyers 1986; Krissoff and Ballenger 1987a,b; Webb, Roningen and Dixit 1987).

Under the second scenario (WM2), the effects of partial liberalisation by the European Community, Japan and the United States are isolated by repeating the reductions in their assistance made in WM1, while keeping policy settings in all other country groups unchanged. It would be expected that most of the effects of WM1 would be captured in this simulation because agricultural trade in these three countries is large in world terms. In addition, key agricultural sectors in these countries are relatively highly assisted and, therefore, the effects of liberalisation of these sectors are likely to have relatively large impacts on world agricultural trade and prices.

The next scenario (WM3) is one in which all countries except the United States, the European Community and Japan partially liberalise. This is intended to show the potential benefits for these individually smaller countries of acting as a group in reducing their own protection (or taxation) of agriculture, irrespective of the actions of the major industrial countries.

Since the countries are grouped according to their net trade status for commodities included in the model, it is also possible to examine more directly the changes in welfare as they affect net importers and net exporters. Previous inferences about the effects of trade liberalisation on developing countries seem to have been drawn from analyses using the traditional aggregations of countries into developed, developing and centrally planned (World Bank 1986).

4.3 Simulation Results

(a) Impacts on world trade and prices

As would be expected, the effects on world prices and trade of a simulated 10 per cent reduction in output assistance by all countries are

Table 8: CHANGES IN WORLD PRICES AND WORLD TRADE WITH A 10 PER CENT REDUCTION IN OUTPUT ASSISTANCE

	All countries (WM1)		US, EC, Japan (WM2)		Rest of the world (WM3)	
Commodity	Price	Trade	Price	Trade	Price	Trade
	%	%	%	%	%	%
Beef	0.7	1.2	0.8	-1.5	-	2.7
Pork	0.4	11.1	0.3	7.0	-	4.1
Mutton and lamb	1.1	2.7	1.1	1.9	-	1.1
Chicken	0.3	7.0	-	0.4	0.3	6.8
Eggs	-	6.0	-	6.2	-	2.6
Butter	2.7	-	2.4	-0.3	0.3	0.7
Cheese	2.5	3.6	1.7	-2.6	0.8	1.2
Non-fat milk powder	1.6	-	1.2	-0.2	0.4	-
Wheat	-3.5	-1.2	0.2	-0.3	-0.5	-0.9
Corn	0.2	1.4	0.4	0.9	-0.2	0.7
Other coarse grains	-	0.2	0.6	-0.8	-0.4	-1.7
Rice	-0.7	13.3	0.3	6.0	-1.0	7.5
Soybeans	-	0.8	-	-	-0.3	0.8
Soybean meal	-0.3	-0.6	-	-	-	-0.6
Soybean oil	0.3	-0.5	0.3	-	-	-0.5
Other oilseeds	0.4	2.3	-	1.3	0.2	-1.0
Other meals	-	-	-	-0.7	-0.2	0.6
Other oils	0.5	-	-	-	0.4	0.2
Cotton	-	0.8	0.3	-	-0.4	1.0
Sugar	1.4	1.4	1.3	0.6	-	0.9
Tobacco	0.3	-	0.3	-0.2	-	-

(-) Less than 0.2 in absolute value.

relatively small (table 8). However, these must be considered as conservative estimates given that the level of agricultural protection has generally risen in recent years from the 1984 support levels incorporated in the model. As shown below, there are several other reasons why these results can be viewed as lower bound estimates. The simulations provide results which are generally consistent, on a reduced scale, with the total liberalisation experiments carried out in the studies referred to earlier.

In all three liberalisation scenarios it is the dairy sector which achieves the most significant increases in both world trade and prices. This reflects the fact that it is the dairy sector which has tended to be the most heavily assisted in the developed countries. When all countries partially liberalise (WM1), world butter and cheese prices each rise by about 2.5 per cent. While the simulation shows that the volume of world butter trade does not change significantly, world trade in cheese increases by about 3.6 per cent.

World grain prices change very little under WM1. This can be explained by the relatively lower protection levels in 1984 than in subsequent years and specifically because the US Export Enhancement Program, which has directly lowered world grain prices, is not included in the model. World corn trade rises by nearly 1.5 per cent under this simulation but the volume of wheat trade falls by about 1 per cent. World prices and trade for other coarse grains remain largely unchanged. While the world price of rice does not change significantly, trade increases by about 13 per cent. The total world trade in rice is small relative to production, but the increase is significant for the developing Cairns Group countries, which are among the world's largest rice exporters.

In the livestock sectors, world prices of both beef and sheep meat increase about 1 per cent. Trade in beef rises by about the same proportion and world mutton and lamb trade increases by nearly 3 per cent.

When all countries liberalise, the simulation shows that sugar prices and trade both rise by 1.4 per cent. There is little discernible change on international markets for most other commodity groupings included in the simulation.

(b) Domestic impacts

Since international prices do not move significantly for most commodities, domestic producer prices generally tend to fall as a result of the cut in assistance. As would be expected, producers in the highly protected agricultural sectors of Japan and East Asia, and to a lesser extent in Western Europe, face the largest percentage falls in price. On the other hand, the simulations show that there are some significant increases in producer prices for some commodities in the developed and developing Cairns Group exporting countries, and in the Other Exporters group. For some of the countries in these groups, the small increases in world prices are augmented by reductions in the effective taxes that are levied on their agricultural sectors.

Predictably, the simulation of multilateral liberalisation (WM1) indicates that these would be fairly general, but small, declines in agricultural production in the European Community and increases in consumption (table 9). However, the simulations also indicate some increases in EC production of poultry products and cheese. More generally, however, the effect of reduced output and increased consumption results in quite

large increases in imports or reductions in exports (table 10). For instance, EC beef exports are estimated to be cut by about 18 per cent while the simulations also indicate reduced exports of butter (down by 8 per cent), coarse grains (down 11 per cent) and sugar (down 9 per cent). However, exports of cheese rise by 7 per cent, EC exports of pork and poultry rise by around 20 per cent and corn imports rise by over a third. The last two changes are the result of reductions in the European Community's domestic feed prices, which make its domestic intensive meat

Table 9: CHANGES IN PRODUCTION WITH A MULTILATERAL 10 PER CENT REDUCTION IN OUTPUT ASSISTANCE(a)

				Exporters				Importers			
Commodity	EC	JP	US	DX	CX	WX	OX	EM	AM	LM	OM
	%	%	%	%	%	%	%	%	%	%	%
Beef	0.6	-3.8	-	-	0.9	-1.6	-	-1.5	-1.1	0.4	-
Pork	0.5	2.0	-	-	-	-	-2.4	0.3	0.3	-1.2	-
Mutton and lamb	-1.0	-0.9	0.6	-	2.6	-2.7	0.2	0.7	-0.3	0.8	0.3
Chicken	0.9	0.4	-	0.4	-	-	-	-0.5	-1.3	-0.9	-
Eggs	0.7	0.4	-0.2	-	-0.2	0.7	0.4	-	-	-	-0.2
Milk	-	-4.5	-1.0	1.2	1.8	-1.3	1.9	-	-	-0.6	-0.5
Butter	-0.5	1.6	0.7	3.4	-4.6	-1.6	-	-	-0.6	-3.3	0.6
Cheese	0.3	8.6	0.6	1.5	-4.2	-1.4	-	-	-0.7	-4.2	0.4
Non-fat milk powder	-0.5	1.6	0.7	3.2	-4.6	-1.6	-	-	-0.6	-3.3	0.6
Wheat	-	-2.3	-0.8	-0.7	-1.4	1.1	1.1	-	-	-0.9	2.0
Corn	-1.7	-	-	-	0.8	-1.7	-0.9	-	0.3	-1.5	-0.2
Other coarse grains	-0.7	-1.9	-0.5	0.4	15.7	-2.1	0.8	-1.2	-	-	-
Rice	-1.1	-3.3	-1.5	-0.4	0.8	-	-0.3	-1.7	-0.3	-	0.6
Soybeans	-0.4	-3.2	-	-	0.6	-	-	-0.4	-	-1.5	0.3
Soybean meal	-	-	-	-	-0.8	-	-	2.7	-	1.5	-
Soybean oil	-	-	-	-	-0.8	-	-	2.7	-	1.5	-
Other oilseeds	-0.4	4.6	-0.6	-	-	-0.4	-	0.4	-	1.0	-0.6
Other meals	-	-	-	-	-	-	-	-	-	-	-
Other oils	-	-	-	-	-	-	-	-	-	-	-
Cotton	-0.4	-	1.4	-	-2.0	-	-	-	-	0.6	-
Sugar	-0.3	-4.0	-2.4	-	0.8	-2.6	1.8	0.6	-	0.5	0.2
Tobacco	-0.4	-	-0.5	-0.2	-	-	-	0.2	-	-	-

(a) See table 4 for countries included in each grouping (-) Less than 0.2 in absolute value.

industries more competitive internationally. In general, the simulated changes in the European Community's agricultural trade position reflect the fact that trade liberalisation in the Community essentially means reductions in the domestic prices facing producers and consumers alike.

Trade liberalisation in Japan also results in quite generalised declines in agricultural production and increases in demand. The reductions in output are all less than 5 per cent and Japan's output of dairy products,

Table 10: CHANGES IN NET TRADE WITH A MULTILATERAL 10 PER CENT REDUCTION IN OUTPUT ASSISTANCE(a)

				Exporters				Importers			
Commodity	EC	JP	US	DX	CX	WX	OX	EM	AM	LM	OM
	%	%	%	%	%	%	%	%	%	%	%
Beef	-17.7	19.2	-7.0	1.7	66.9	-30.5	6.8	10.1	11.7	28.5	11.9
Pork	22.3	21.2	-1.2	15.6	3.3	-19.3	(b)	-10.3	(b)	(b)	(b)
Mutton and lamb	14.8	0.6	-10.1	1.5	62.3	(b)	(b)	-1.6	26.1	-12.3	68.2
Chicken	21.2	-11.2	1.2	153.1	-5.7	2.0	(b)	1.4	11.7	(b)	(b)
Eggs	29.7	6.5	-18.9	24.4	259.0	-1.6	(b)	1.4	22.4	19.1	(b)
Butter	-8.2	-0.3	2.4	6.4	15.6	-8.0			-1.3	4.2	-162.8
Cheese	6.9	-2.4	-3.9	4.1	39.5	-3.5			-0.7	(b)	(b)
Non-fat milk powder	-6.1	-	0.4	4.0	0.4	-6.3			-0.5	-	9.3
Wheat	-1.1	0.5	-1.9	-1.0	20.7	6.8	-0.9	-0.8	-0.4	2.0	-57.7
Corn	37.7	-2.0	0.3	3.5	8.2	53.0	1.0	-	-8.3	9.4	(b)
Other coarse grains	-11.3	0.3	-1.6	1.0	112.3	-79.1	-6.5	5.8	-1.9	-	(c)
Rice	16.3	(b)	-2.6	-0.6	17.5	-	-187.8	56.0	2.3	52.6	49.1
Soybeans	-	0.3	-0.7	9.0	8.3	-	0.3	2.9	0.3	7.8	(b)
Soybean meal	0.6	-25.6	0.8	1.6	-1.5	-4.8	-0.4	-16.2	-0.5	-9.9	0.4
Soybean oil	-	25.4	2.4	-1.8	-1.7	-	-0.2	-27.9	-	-2.4	-
Other oilseeds	2.4	-	7.6	0.5	6.7	-12.0	4.5	-0.5	7.6	-1.8	(b)
Other meals	0.4	-8.1	6.1	-10.8	-0.4	-6.0	0.3	-	0.4	10.5	3.8
Other oils	-3.1	-0.3	-0.3	0.3	-	-0.5	-2.7	-0.5	-	-1.3	3.0
Cotton	-	-	-2.1	-	5.2	-	2.4	-	1.3	2.5	6.2
Sugar	-8.6	7.4	12.7	-	4.2	13.1	2.5	6.1	-1.1	120.1	4.6
Tobacco	0.2	-0.5	-45.2	-1.3	0.4	-	0.6	-6.7	0.9	0.6	2.1

(a) See table 4 for countries included in each grouping. (b) Large proportionate change from a small base. (c) Trade switches from a low volume of exports to net imports. (-) Less than 0.2 in absolute value.
Note: Underlined figures indicate the country or group is a net importer before trade liberalisation.

especially cheese (up by 9 per cent), rises. The net result of reducing protection is substantial increases in imports of beef (up 19 per cent), pork (up 21 per cent), sugar (up 7 per cent) and especially rice. Given the assumptions of the model, Japan's imports of rice are simulated to rise from an insignificant level to around 0.6 Mt, providing a significant boost to the volume of world rice trade. Japanese imports of corn fall slightly, reflecting the fact that reduced levels of milk and meat production lead to corresponding declines in grain demand for livestock feeding.

In the case of the United States, the simulated changes in US agricultural production and consumption are generally quite small but these changes do generate more substantial changes in trade. US production of beef, pork and sheep meat all remain close to their base levels, reflecting either stable or slightly higher producer prices. Consumer prices also rise marginally, so the simulation (WM1) indicates declines in consumption. The net effect of these changes is quite a substantial drop in US imports of these meats. The simulations indicate relatively large declines in imports of beef (down 7 per cent) and sheep meat (down 10 per cent).

By contrast, US output of food and feed grains falls because US producer prices for grains fall as assistance to agriculture is reduced. The declines in output are small, the largest decline being a drop of 1.5 per cent in rice production. These changes in production lead to lower exports because domestic consumption changes very little. Both producer and consumer prices for sugar decline by around 5 per cent, reducing production and stimulating increased domestic consumption. As a result, US sugar imports rise by 13 per cent.

Although exports from the two Cairns Group sets of countries generally increase, the impacts of trade liberalisation on these groups of countries are varied, reflecting the diverse circumstances of their agricultures. Given this diversity, one of the more striking results of trade liberalisation on the group as a whole is the increase in the exports of rice from the developing country members. This gain in trade is quite remarkable, given that the simulations involve only a small reduction in agricultural assistance. While the SWOPSIM model used here does not simulate bilateral trade flows, it seems clear that the increased exports of rice are to a significant extent destined for Japan. Another important change for the developing country members of the group is that their exports of sugar are simulated to rise about 4 per cent.

An important change in trade for the Cairns Group as a whole is that its wheat exports are simulated to fall. This reflects reductions in producer prices and therefore production. Offsetting this change, however, is quite an appreciable increase in the group's exports of coarse grains and oilseeds which probably reflects the reductions in exports from the European Community and the United States. In both cases producer prices in the group of developing Cairns Group countries rise, stimulating increased output, while consumer prices also rise, thereby reducing domestic consumption. The changes in feedstuffs trade are most marked for the developing members of the Cairns Group. For this group of countries, exports of corn rise 8 per cent while the group's exports of coarse grains more than double.

There are also some appreciable changes in the Cairns Group's trade in livestock products. Exports of beef rise principally because of a two-thirds increase in exports from the group of developing Cairns Group countries. This probably reflects increased shipments from Argentina. Exports of dairy products from the developed members of the group also rise. In the case of

butter, domestic consumption changes very little but output increases by around 3 per cent. For cheese and milk powder the simulated increases in production are about double the rise in consumption. The net effect of these differential changes is that the increase in butter exports is about double that for cheese.

For the developing net food importing countries, producer and consumer prices generally fall as a result of the liberalisation simulated here. The largest proportionate declines in producer prices occur for cereals in the East Asian (EM) and Latin American (LM) countries. In contrast to these importing declines, producer prices for sugar increase in Latin America and in the Other Importers group (OM - India and Other Asia) while producer prices for wheat and cotton also rise in that group.

Reflecting the changes in prices, agricultural production generally falls in the East Asian group with the largest proportionate decline in the group being a 1.7 per cent drop in rice production. Output also declines in the other groups of countries within the developing importers group, the most notable among the declines being the 1-4 per cent declines in production of cereals, oilseeds and dairy products in Latin America.

Although the simulations indicate that trade liberalisation imposes some costs on producers in the developing importing countries, their consumers gain. In the East Asian countries, beef consumption rises nearly 3 per cent, consumption of coarse grains and oilseeds increases by 1-3 per cent and consumption of sugar increases by 4 per cent. In Latin America consumption of beef and dairy products falls, but there are increases in consumption of pork (up 3 per cent) and poultry meat (up 1.6 per cent).

Reflecting the generally high protection in the East Asian Importers and the reductions in consumer and producer prices with liberalisation, this region's net imports generally rise. The simulations indicate relatively substantial increases in imports of beef (up 10 per cent), coarse grains and sugar (both up 6 per cent) and an increase of over half in rice imports. Liberalising agricultural trade in this region, therefore, would provide an important stimulus to the aggregate increase in world rice trade. However, the region's imports of pork fall by 10 per cent. Exports of beef by the Latin American Importers rise by around 30 per cent. Rice exports from the Other Importers group rise by nearly half while imports of sugar fall 5 per cent.

(c) Welfare effects

Changes in welfare are measured in the SWOPSIM framework by changes in the economic surpluses of producers, consumers and taxpayers, the last incorporated through changes in government expenditure on agriculture. The sum of these gives an indication of net domestic welfare gains or losses brought about through liberalisation.

The critical finding of the simulation of a multilateral liberalisation (WM1) is that all country groups stand to gain from participating in the 10 per cent reduction in assistance (table 11). This finding contradicts some generally held expectations about the impacts of trade liberalisation. One reason for this is that a distinguishing feature of the present analysis is the aggregation of countries into more homogeneous groups based on their agricultural trade - the issue of interest in this case. The more common aggregation of countries by their development status has probably tended to mask the result obtained here.

Table 11: SUMMARY OF WELFARE GAINS OR LOSSES WITH A 10 PER CENT REDUCTION IN OUTPUT ASSISTANCE

Item	Partial liberalisation by: All countries (WM1)	EC, Japan, US (WM2)	Rest of world(a) (WM3)
	US$m	US$m	US$m
United States (US)			
Producers	-1 282	-1 312	43
Consumers	224	310	-86
Budget	1 264	1 257	8
Total	207	246	-35
European Community (EC)			
Producers	-954	-1 120	170
Consumers	1 113	1 275	-164
Budget	1 120	1 113	6
Total	1 278	1 268	12
Japan (JP)			
Producers	-1 502	1 499	-3
Consumers	1 312	1 291	20
Budget	1 056	1 048	8
Total	867	842	25
Developed Cairns Group (DC)			
Producers	-68	163	-239
Consumers	6	-115	133
Budget	200	-8	207
Total	138	40	101
Developing Cairns Group (CX)			
Producers	543	220	322
Consumers	-492	-245	-249
Budget	129	70	66
Total	181	45	139
Other Western Europe (WX)			
Producers	-618	82	-698
Consumers	279	-87	366
Budget	555	-27	580
Total	216	-32	248
Other exporters (OX)			
Producers	33	36	-4
Consumers	6	-21	15
Budget	14	3	11
Total	41	18	22
East Asian importers (EM)			
Producers	-267	16	-284
Consumers	489	-32	522
Budget	-96	4	-92
Total	126	-20	146

(Continued on next page)

Table 11 (continued)

Item	Partial liberalisation by: All countries (WM1)	EC, Japan, US (WM2)	Rest of world(a) (WM3)
	US$m	US$m	US$m
African importers (AM)			
Producers	-174	137	-310
Consumers	83	-198	281
Budget	99	-78	174
Total	10	-139	145
Latin American importers (LM)			
Producers	-348	115	-464
Consumers	104	-152	255
Budget	470	18	454
Total	225	-19	245
Other importers (OM)			
Producers	286	279	10
Consumers	6	-10	319
Budget	-128	31	-156
Total	164	0	173
Rest of the world (RW)			
Producers	43	603	-57
Consumers	-607	-681	70
Budget	-86	-73	-14
Total	-150	-151	-1
World total			
Producers	-3 795	-2 275	-1 505
Consumers	2 501	1 026	1 469
Budget	4 599	3 349	1 255
Total	3 305	2 100	1 219

(a) Excludes liberalisation by centrally planned economies.

The European Community and Japan benefit most from partial trade liberalisation. The benefits stem from the large gains to consumers and the reductions in budgetary cost of their farm programs. Although producer surplus declines over nearly all commodities, the transfers to consumers and taxpayers outweigh these losses giving net benefits of nearly US$1.3b to the European Community and about US$870m to Japan. In the European Community, the largest declines in producer surplus fall on beef, wheat, corn and coarse grain producers (table 12). In Japan, producers of rice as well as of livestock face the greatest falls in profitability.

The United States gains a modest US$207m from partial and multilateral trade liberalisation. The fact that the United States also gains overall stems from the reduction in the budgetary cost of the US farm program even under a small reduction in assistance to agriculture. In this case, the loss in producer surplus of about US$1.3b is offset by a reduction in government outlays of a similar amount. Livestock producers gain slightly, while cereal

Table 12: CHANGES IN COMMODITY SURPLUSES WITH A MULTILATERAL 10 PER CENT REDUCTION IN OUTPUT ASSISTANCE(a)

Commodity	US	EC	JP	Exporters				Importers			
				DX	CX	WX	OX	EM	AM	LM	OM
	US$m	US$m	US$m	US$m	US$m	US$m	US$m	US$m	US$m	US$m	US$m
Change in producer surplus											
Beef, mutton	25	-440	-124	16	194	-138	5	-14	-144	53	16
Pork	12	34	-146	4	-3	-11	-13	15	3	-110	
Poultry meat, eggs	-43	81	-36	-9	-18	4	-1	-4	-72	-38	-8
Milk	-285	-18	-192	-66	59	-129	2		5	-60	-115
Dairy products	46	10	39	101	-23	-21			20	-104	-11
Wheat	-332	-128	-45	-92	-41	-11	1		4	-20	244
Corn	-246	-154		-3	73	-39	-10	-3	21	-71	
Other coarse grains	-64	-159	-20	-3	23	-228	1	-9	6	-9	
Rice	-69	-10	-928	-1	195		-14	-245	-60	-3	216
Soybeans	-80	-2	-20	-1	56			-3		-13	2
Soybean meal, oil	-2	-2		0	-21			6		3	
Other oilseeds	4	-23		-5	11	-6	2		12	3	-52
Other meals, oils		-33	1	2	22		1		9	2	-60
Cotton	-71	-5		-1	-24				7	2	32
Sugar	-118	-65	-33	0	36	-37	-57	-11	10	16	16
Tobacco	-58	-39	1	-4	6	0	2	0	6	1	5
Change in consumer surplus											
Beef, mutton	-154	480	143	-33	-180	142	-5	66	171	-42	-16
Pork	-63	195	160	-9	-15	104	13	-6	-3	122	
Poultry meat, eggs	-7	87	44	11	-1	24		8	64	54	4
Milk	126	58	88	9	-57	-44	-2		-7	-58	89
Dairy products	116	56	34	10	-47	-30			-65	-43	43
Wheat	9	73	27	5	26	12	-6	6	-47	20	-90
Corn	-5	47		0	-13	2	-4		-42	52	-1
Other coarse grains		35	2	0	-4	24	-1	4	-5		-2
Rice	2	12	713	0	-133		13	325	74	4	-41
Soybeans	16	7	3	0	-52			52		16	
Soybean meal, oil	-5	-1		0	-1						7
Other oilseeds	-8	-11	-3	-4	-11	-1	-2		-12	-2	-20
Other meals, oils	-4	-29	-3	-2	-9	-1	-2	-1	-16	-3	102
Cotton		1		0	29				-13	-2	-39
Sugar	149	111	106	2	-19	47	-10	35	-13	-14	-24
Tobacco	51	-7	-2	4	-4	0	-1	0	-4	-1	-5
Change in government expenditure											
Beef, mutton	-100	-381	-33	-50	-79	-59	0	23	-28	0	0
Pork	-40	12	-95	-11	-11	-28	-11	-7	0	-68	0
Poultry meat, eggs	-52	7	-42	-8	-6	-7	0	-12	-4	-78	0
Milk	-76	14	-72	-22	-9	-343	0	0	1	-156	0
Dairy products	4	-328	8	0	0	0	0	0	0	-125	0
Wheat	-355	-53	-36	-76	-9	-4	-8	8	-20	-6	50
Corn	-306	-67	5	-3	28	-14	-17	4	-55	-28	0
Other coarse grains	-81	-61	10	-12	-67	-87	0	-1	-2	-7	0
Rice	-75	-5	-776	0	22	0	0	47	6	0	137
Soybeans	-73	-2	-31	-1	0	0	0	30	0	-2	3
Soybean meal, oil	0	0	0	0	0	0	0	0	0	0	6
Other oilseeds	-10	-39	0	-16	0	-7	0	0	0	0	-68
Other meals, oils	0	-65	0	1	0	0	0	0	0	0	6
Cotton	-87	-5	0	-1	-6	0	0	0	-4	-1	-4
Sugar	-9	-97	5	0	9	-5	21	5	5	1	-1
Tobacco	-4	-48	0	0	0	0	0	0	0	0	0

(a) See table 4 for countries included in each grouping.

and dairy producers incur the largest falls in producers surplus. Even then, however, the simulation indicates that the fall in surplus experienced by wheat and rice producers, for example, is only about 4 per cent of the base value of production. Even the highly protected US sugar producers face only a slightly larger proportionate fall.

These simulated impacts on net economic welfare also reflect the fact that the United States tends to use more transparent forms of assistance

than the European Community and Japan. US consumers fund less of the US assistance than is the case, for instance, in Europe, Japan and East Asia. Under these circumstances, US consumers face some price increases as world prices rise as a result of trade liberalisation, thus limiting the prospective gain in overall economic welfare.

The simulated loss of producer surplus in the developed Cairns Group countries is an interesting result in the light of policy changes since 1984. A large part of these losses would reflect reductions in assistance under New Zealand's Supplementary Minimum Price support scheme for principal commodities. This scheme has been abolished since 1984, so for New Zealand at least there would be less chance of losses to producers overall from reducing assistance from 1986 levels. Since 1984, however, Canada has provided substantial support to its grain farmers to help maintain their incomes in the face of the sharp falls in grain prices up to 1986. Therefore trade liberalisation from a 1986 base would be likely to mean an overall loss of surplus to Canadian farmers, perhaps maintaining an overall loss in producer surplus for the developed Cairns Group countries as a whole.

The net gains of about US$180m for the developing Cairns Group countries are derived principally from an increase in producer surplus of about US$540m. Although government revenue is reduced for some commodities, there are also net budget gains for this group. However, as these countries are relatively open to the world market, consumers face some price increases. Consequently, consumer surplus falls for nearly every commodity giving a total consumer loss of about US$490m. Rice and beef producers receive the highest absolute gains.

As indicated before, importing countries also gain from a partial reduction in agricultural assistance. The general pattern for the importers, as for the exporters, is that a reduction in intervention leads to declines in producers surplus. The one exception is the Other Importers group (OM). For this group the producer gains reflect the pattern of subsidies and taxes affecting agriculture as well as the changes in world prices resulting from trade liberalisation. Despite the fact there are some increase in world prices, consumers in the importing countries gain from trade liberalisation. Reductions in protection from imports outweigh the generally small increases in world prices which occur for some commodities.

The simulations indicate increased budgetary costs in the East Asian Importers (EM) group and in the Other Importers group (OM) but gains to taxpayers in the two other importing country groups. In the Other Importers group the increased budgetary costs reflect reductions in revenue from import duties and subsidies and reduced revenue from export taxes. For the East Asian Importers, the fall in revenues from import duties exceeds the savings in program costs.

(d) Some strategic issues

Trade liberalisation can be treated in a strategic way by, first, analysing the interactions of policy decisions that may be made by the different participants in the trade negotiations, and, second, analysing the impacts of different degrees of liberalisation.

Analysis of the data in table 11 indicates that all the country groups analysed here stand to gain from a partial reduction in agricultural protection. The data also indicate that the bulk of the potential welfare gains arise from improving the efficiency of domestic resource utilisation

through domestic agricultural policy reform. Furthermore, it is the Cairns Group countries and the Other Exporters group (OX) which have relatively most to gain from agricultural policy adjustment within a multilateral context, since they benefit most from any increase in world prices.

It is also clear that if either the United States, European Community and Japan as a group or the remaining regions in the model proceed to reduce protection, then countries in the other group will improve their net welfare if they also reduce agricultural protection. For instance, when the European Community, the United States and Japan liberalise alone, those three countries gain about the same as under multilateral liberalisation (table 11). In this case the food importing developing country groups face net welfare losses due to higher world prices. But these losses are converted into net gains if the food importing countries also participate in reducing protection. As a result of this change, the greatest net welfare benefits for the world as a whole are attained under the multilateral liberalisation alternative analysed.

Not all developing food importing countries can be expected to gain directly from agricultural trade liberalisation. In cases where a country does not intervene in its agriculture and where its farm sector is a relatively small part of the economy, it may well suffer a loss. In such a case the potential gains to producers will most likely be outweighed by the losses to consumers. However, from the perspective of the developing food importing countries as a group there appears to be a particularly strong case for a partial liberalisation of agricultural trade. As shown in table 13, all country groups that are simulated to reduce agricultural protection achieve net benefits from multilateral reductions in protection up to amounts equivalent to 20 per cent of assistance to output. The world as a whole and most country groups achieve additional benefits from larger reductions in assistance. But the African Importers group records net welfare losses when protection is reduced by more than 20 per cent. The welfare impacts of partial liberalisation of up to 30 per cent on this group are small in absolute terms and in relation to the population size in these countries. Nevertheless, the switching from net welfare gains to net welfare losses, on temperate agricultural products, is a significant result.

Despite this, the African Importers group still has an incentive to participate in liberalisations greater than 20 per cent. If the European Community, Japan and the United States abolish all their protection and the other countries do not participate in this full liberalisation, the net welfare loss to the African Importers would be US$2b. This is more than double the US$900m welfare loss to African Importers if all countries liberalise fully (table 13).

The policy choice for food importing regions is clear: on economic grounds they do best as a group from liberalising their own agricultural policies. They attain the largest benefits from liberalising unilaterally. Furthermore, if the major industrial countries reduce their agricultural protection, even by a small percentage, and help to strengthen world prices, the choice for food importing countries remains unchanged. They too must liberalise their domestic policies if they are to maximise their welfare.

Nevertheless, the developing food importing countries have a further reason for participating in a partial liberalisation of agricultural trade, especially in the context of the Uruguay Round, which is a comprehensive trade negotiation involving sectors other than agriculture. By participating in the trade negotiations for agriculture, these countries should also be

Table 13: WELFARE GAINS OR LOSSES UNDER DIFFERENT LEVELS OF MULTILATERAL REDUCTION IN OUTPUT ASSISTANCE

Country or group	Liberalisation			
	10 per cent	20 per cent	30 per cent	100 per cent
	US$m	US$m	US$m	US$m
United States (US)	207	416	626	2 484
European Community (EC)	1 278	2 516	3 711	13 217
Japan (JP)	867	1 723	2 568	10 024
Developed Cairns Group (DX)	138	286	444	2 811
Developing Cairns Group (CX)	181	337	473	1 077
Western European exporters (WX)	216	440	674	4 056
Other exporters (OX)	41	82	125	701
East Asian importers (EM)	126	256	391	1 913
African importers (AM)	10	5	-13	-904
Latin American importers (LM)	225	435	631	1 630
Other importers (OM)	164	254	474	1 685
Rest of the world (RW)	-150	-229	-449	-2 050
World total	3 305	6 456	9 660	37 008

able to argue more strongly for trade liberalisation in areas other than agriculture. Some developing countries are likely to achieve larger gains from liberalisation of trade in manufactures and other non-agricultural elements of international trade.

4.4 Results in Perspective

The general magnitudes of the impacts of trade liberalisation estimated here are broadly consistent with the results obtained in other studies (OECD 1987b; Anderson and Tyers 1987; Webb, Roningen and Dixit 1987). Nevertheless, as with those results, the estimates obtained here should be considered as relatively conservative. The fact that the simulations are from levels of protection lower than current rates has been mentioned already. Moreover, the static agricultural trade models used here and by other authors cannot capture:

- the benefits resulting from countries engaging in new forms of agricultural production as their comparative advantage changes;
- the benefits that could arise through economies of size available under more liberal trading conditions;
- the benefits of technical change which might be available under more liberalised trading conditions; and

- the benefits of freer trade in helping to stabilise world prices (Anderson and Tyers 1987).

A reduction in assistance as small as 10 per cent may not contribute a great deal to price stability, because producers and consumers in countries like the European Community and Japan would remain largely insulated from the world market. Nevertheless, the potential gains in stability as the process of liberalisation proceeds would be important in terms of enhanced security of access to food and economic management. The stability issue is particularly relevant to the lower income, developing, net food importing countries.

Another issue important to developing countries is that, in common with other similar agricultural trade models, the model used here does not account for the gains from liberalising trade in tropical products (Valdes 1987). This reinforces the point made in section 4.3, namely that developing food importing countries stand to benefit by participating actively in the Uruguay Round across a broad front.

An equally important and related point in interpreting the results reported here is that the analysis rests on a partial equilibrium framework. While providing useful insights, this framework covers only a part of the gains from liberalising trade. The agricultural negotiations are obviously part of a much more comprehensive effort in the GATT. There will be benefits to countries from liberalising trade in other sectors which should compound the benefits achievable on agriculture (Blandford 1987).

5. CONCLUSIONS

The analysis of the potential role of early action on the reform of agricultural policies within the Uruguay Round focuses on two major questions. These are, first, the nature of the policy adjustments that might be involved and, second, the possible implications of early action for agricultural production, prices and trade. Four major conclusions stand out in this study.

The first is that it seems it should not be especially difficult to implement a small reduction in assistance to agriculture in the major developed agricultural trading countries. The policy changes needed to reduce assistance to output in these countries by 10 per cent from 1986 levels are not large in an absolute sense, requiring only small adjustments to policy settings.

The second conclusion to stand out in this study is the finding that all country groups participating in the Uruguay Round stand to gain from a small and multilateral reduction in agricultural protection. A substantial gain was to be expected in the case of major industrial countries, given the distortions associated with their present support policies. But the analysis shows that even net food importing developing countries would benefit overall from a partial reduction in agricultural protection. Improved domestic resource allocation would offset the impact of higher world agricultural prices.

The analysis also shows that net importing developing countries as a group potentially could lose from higher world food prices if they do not respond to partial liberalisation in the major industrial countries by also adjusting their own agricultural programs. Thus the third major finding of this study is that the developing countries as a group have a clear economic incentive to participate in reducing agricultural protection - either to maximise their potential gains (in the case of the Cairns Group) or to achieve net benefits from trade liberalisation initiated by the major developed countries (for net food importing countries).

The fourth major finding of the study is that the welfare gains accruing to all country groups, with the exception of the African Importers group, generally rise with additional progressive reductions in protection. The African Importers group of countries incurs a net welfare loss when agricultural protection is reduced multilaterally by more than 20 per cent.

These four conclusions add up to the fact that there seems to be a sound economic case for countries agreeing to undertake early action in the Uruguay Round to change agricultural policies in a direction that would allow comparative advantage to have a greater role in determing agricultural production and trade. This conclusion is given added strength by the fact the simulation results presented here are based on only a part of the changes that could arise from the Uruguay Round. The analysis is restricted to the gains from trade liberalisation for temperate zone farm products occurring in isolation from liberalisation in other agricultural and non-agricultural trade. To maximise the prospective benefits from the trade negotiations, developing countries as a group would seem to have an economic interest in pressing in the Uruguay Round for substantial and early liberalisation of trade in tropical products, products based on natural resources and manufactures that have particular importance to their economies. By the same token, if the developed countries wish to maximise

their potentially substantial gains from agricultural trade liberalisation and from trade liberalisation generally, they must in turn be responsive to the trade interests of developing countries.

Appendix A

COMPARISON OF NEGOTIATING PROPOSALS SUBMITTED TO THE URUGUAY ROUND NEGOTIATING GROUP ON AGRICULTURE 1987

A1 Identified Problems

United States. International trade problems are created through domestic policies and border measures that are designed to assist producers and which therefore distort production, consumption and trade.

European Community. The major problem is the imbalance between world supply and demand. The differences in levels of protection for the various agricultural sectors within many countries also contribute to distortions in their domestic markets.

Cairns Group. The problems of agricultural trade are due to a combination of barriers to access, and widespread government programs of price and income support, which lead to overproduction and stagnant demand in some parts of the world and unfulfilled demand in others.

Japan. Trade in agriculture is unstable (compared with industrial products) owing to the precariousness of supply resulting from weather conditions and perishability of products. This creates special problems for importing countries. The world market for major commodities is in a state of disequilibrium caused particularly by the structural surpluses in world production.

Nordic countries. Major problems are the imbalance of supply and demand in major commodities, low world market prices, excessive subsidised exports, increasing trade barriers, increasing budgetary expenditures and declining returns to farmers.

A2 Objectives

United States. Complete elimination of all agricultural subsidies and import barriers over ten years. Exceptions would be made for policies that are either production and trade neutral or have such a small effect as to be inconsequential (for example, decoupled income support and bona fide foreign and domestic aid programs).

European Community. Prevention of a resurgence of supply and demand imbalances through measures based on equitable burden sharing between countries and giving credit for reforms already taken unilaterally. The proposal aims to link actions to achieve significant long term reductions in support with actions to reduce disparities in the levels of external protection among agricultural sectors. The proposal implies a liberalisation of agricultural markets which is 'realistic' given the 'special characteristics' of agriculture (that is, agriculture's role in contributing to economic stability, social cohesion and the environment).

Cairns Group. Fully liberalised trade in agriculture within a specified time frame of ten years or less, through eliminating (with few exceptions) protectionist and distortive agricultural policies. Reforms would be supported by strengthened GATT rules and disciplines. The proposal also

calls for early action which is consistent with, and acts as a downpayment on, longer term reform.

Canada. The elimination of trade distorting subsidies and market access barriers and the establishment of equitable, predictable and enforceable international rules against which national agricultural policy decisions could be taken. Major reductions in assistance are called for during the initial phase of reform, which is envisaged as extending over five years.

Nordic countries. Market signals to be allowed to play a larger role in determining the allocation of resources in agriculture. The special characteristics of agriculture (for example, food security) are to be taken into account in formulating rules on agricultural trade, but such characteristics should not be used as a general escape clause from international trade disciplines.

Japan. Long term objective is to allow market forces to function more effectively, while taking into account the 'specific' characteristics of agriculture such as its mixed social and economic roles. The focus should be on the current structural world surplus, with the aim of achieving reforms that increase predictability and stability in agricultural trade. Greater liberalisation should be achieved by bringing all measures affecting import access and export competition under strengthened and more operationally effective GATT rules and disciplines, while giving consideration to the balance of rights and obligations between exporting and importing countries.

A3 Negotiating Process

United States. Two phases of reform are envisaged. The first would involve agreement on the measurement of aggregate levels of support and on an overall schedule of reductions for taking aggregate levels of support to zero over a ten year period. The second phase would focus on negotiating the specific policy changes that countries would make to implement their commitment to reduce agricultural support.

European Community. Two reform stages are envisaged. In the first stage short term action would be taken to ease existing imbalances in cereals, cereal substitutes, sugar and dairy products. There would also be parallel action to reduce support, with the requirement that there should be equivalence between countries in these reform efforts. In the second reform stage, which would address the long term, concerted reductions in support would be negotiated in conjunction with unspecified readjustments in external protection.

Cairns Group. Three interrelated negotiating phases are envisaged. First, early action measures would be implemented immediately there is provisional agreement on a long term framework within which agricultural trade could take place with minimum distortion, or by the end of 1988, whichever is the sooner. Second, a reform program would be negotiated in which specific commitments to agricultural reform would be agreed. Schedules containing these commitments would be implemented with the aim of eliminating or reducing trade distorting policies. Third, at the end of the reform program, a long term framework of revised and strengthened rules and disciplines for agriculture would come into operation.

Canada. The first phase of the negotiating process would focus on reaching agreement on a measurement of aggregate support and obtaining commitments on

the degree of cuts in aggregate support. The second phase would involve countries submitting national plans to implement this commitment.

Japan. The proposal envisages a first step consisting of emergency measures involving a freeze on export subsidies. No time frame is specified for a second stage involving the negotiation and implementation of longer term reform measures on access restrictions and subsidies.

Nordic countries. Measures to reduce agricultural support would be implemented in two stages. In the first, immediate action would be taken to prevent an increase in excess supply and to correct market imbalances by an agreed date (for example, 31 December 1988). An unspecified second stage is envisaged for negotiations on improved GATT rules, access and other matters.

A4 Aggregate Measure of Farm Support

United States. Proposes to use a producer subsidy equivalent (PSE) type measure to provide the basis for countries to make commitments on the reduction and elimination of agricultural support. Certain policies which are production or trade neutral (that is, decoupled support) would be excluded from the measure as would bona fide foreign and domestic aid programs. When national implementation plans are being negotiated, countries would be awarded debits and credits for policy actions taken since the launch of the Uruguay Round in September 1986 at Punta del Este that affect the overall trade environment.

European Community. Proposes the use of a PSE-type measure to enable GATT undertakings on support to become operational. The PSE could be a basis for measurement provided it was modified to take account only of measures with a significant incidence on trade, to enable the quantification of production restraint measures, and to accommodate problems relating to world price and currency fluctuations.

Cairns Group. Proposes to use a PSE-type measure during the transition period as a measure of aggregate support and to specify the point of departure for, and to monitor progress towards, agreed targets for reduced overall support.

Canada. Proposes the use of a trade distortion equivalent (TDE), a modified PSE that would exclude mutually agreed trade neutral programs, to negotiate reductions in support. The TDE could be reduced by a certain percentage for each country over five years, with the TDEs for each major commodity group being reduced a minimum of 10 per cent over five years. Credit could be given to those countries that effectively limit the output eligible for direct or indirect income transfers.

Japan. Rejects the need for a comprehensive aggregate measurement of the level of protection and support. In particular, the use of PSEs as a negotiating tool is rejected on the grounds that they are not suitable for inter-country comparisons of protection levels and do not reflect the wide-ranging purposes of agricultural support policies or the different conditions applying in various countries.

Nordic countries. Propose use of a PSE, modified to take account of production neutral support systems and currency and price fluctuations, to express the quantitative targets of reduction in support and to monitor observance of commitments. Owing to the unavoidable deficiencies of any

quantitative measurement device, the targets are not foreseen as constituting legally binding obligations under GATT.

A5 Timing

United States. There would be a ten year transition period during which complete elimination of trade distorting support would be implemented and new rules would be negotiated to govern agricultural trade after the transition period.

European Community. No specific time frame is proposed. Stage one of the reform process would be relatively short, while the timetable for stage two should be sufficient to enable the changes negotiated to have an impact within a reasonable period. Results of agricultural negotiations cannot be implemented unless other negotiating groups produce satisfactory results.

Cairns Group. There would be a transition period of ten years or less during which the reform program would be implemented. Early action measures would go into effect at the end of 1988 or after provisional agreement on the long term framework, whichever is sooner.

Canada. The initial reform phase would extend over five years. Timing for eventual elimination of policies is not specified.

Japan. Export subsidies would be frozen immediately, and then phased out over a fixed period of time to be negotiated.

Nordic Countries. Immediate measures should be taken as soon as possible. No timeframe is given for other reforms.

A6 Policy Coverage

United States. The proposal applies to all policies which directly or indirectly support agriculture, including market price support and income support tied to production, as well as policies providing for research and advisory services. Direct income support unrelated to production and trade, and bona fide foreign and domestic food aid, would be excluded from the general phasing out of support.

European Community. Action would be directed only at measures which have a significant impact on trade. Loss of earnings by farmers would be offset. However, such assistance would be administered so as not to produce unwanted effects on output. Two-price systems would continue.

Cairns Group. All support measures are included, except direct income support, adjustment assistance that is production or trade neutral or which acts to reduce production or export levels, non-commodity-specific infrastructure development, and natural disaster relief measures. The proposal targets the most distorting policies.

Canada. The proposal is similar to that of the United States except that mutually agreed trade-neutral programs would be exempted.

Japan. The policy coverage includes tariffs and all quantitative import restrictions (duties, taxes and other charges exempted). The coverage extends to measures legalised by waivers, to variable levies and to minimum

import prices. Quantitative restrictions used by governments to limit overproduction would be allowed under certain conditions. Export subsidies (as defined in the 'Subsidies Code') and government domestic subsidies, which could have adverse effects on trade, would be included. Excluded from the reform process would be domestic subsidies aimed at improving infrastructure and the structure of agriculture, and policies promoting social welfare, research and development, disaster relief and dissemination of information. Subsidies that have a neutral or restrictive effect on production would be allowed.

Nordic countries. The proposal covers all policies that have a significant effect on agricultural trade. Production-neutral support systems would be excluded. The most trade-distorting measures would be targeted.

A7 Commodity Coverage

The United States, Canadian and Japanese proposals include all agricultural products in their commodity coverage. The United States and Japan also include fishery and forestry products. The European Community and Nordic proposals do not specify a particular commodity coverage, but the European Community envisages priority action in certain sectors (for example, cereals, cereal substitutes, sugar and dairy products).

A8 Short Term Measures

United States. Not mentioned in the proposal.

European Community. Emergency measures are envisaged in the form of price disciplines for cereals (and corresponding arrangements for cereal substitutes), disciplines for sugar aimed at reducing quantities exported while maintaining present access to traditional import markets, and compliance from non-member exporters with the International Dairy Arrangement. Other short term measures would consist of 'equivalent' undertakings to reduce support.

Cairns Group. The proposal calls for a freeze on current support levels, no new health and sanitary regulations that act as disguised trade barriers, commitments regarding the release of stocks, an across the board reduction by 'X' per cent in all export and production subsidies affecting trade, and a commitment to increase access opportunities.

Canada. Unspecified.

Japan. Export subsidies to be frozen immediately.

Nordic countries. Immediate measures to prevent increases in excess supply and to correct market imbalances. These measures should be taken by countries exporting with the help of direct or indirect government support and would apply to agricultural commodities in excess supply on world markets. Measures would include reductions in guaranteed prices and other production incentives, and the imposition of quantitative production restrictions and other measures as defined by participants.

A9 Long Term Measures

United States. Phase out over ten years all agricultural subsidies which directly or indirectly affect trade and all import barriers. Harmonise health and sanitary regulations according to internationally agreed standards, with the caveat that this should not affect adversely animal, plant and human health and safety.

European Community. Two-fold action aimed at eliminating imbalances in internal production through combining a reduction in support for some sectors with an increase in support for other sectors. Aid should be provided to farmers to offset income losses associated with these reforms, but assistance would have to be administered so as not to produce unwanted effects on output. Negotiations could also aim to bind maximum levels of support, protection and export compensation where such measures are necessitated by the existence of a two-price system.

Cairns Group. Long term reform proposal allows for: the reduction and elimination of trade distorting policies, with priority treatment for the most trade distorting policies; phasing out of direct export subsidies and other subsidies which affect trade; enlargement of import access through tariff reductions, the phasing out of non-tariff barriers or enlargement of minimum access arrangements; agreements and undertakings on sanitary and phytosanitary measures; and agreements on GATT rules and disciplines that would have the effect of removing restrictions to the trade in agricultural products and of prohibiting the use of all subsidies that have an impact on trade.

Canada. The proposed reform package would involve reducing aggregate levels of support, with specific commitments for major commodities; agreements to introduce no new trade restrictions or trade distorting subsidies, and to have GATT rules which clarify permissible support arrangements for agriculture; and strengthened commitments to prohibit the use of technical regulations as disguised trade barriers.

Japan. The proposal envisages the reduction of tariff rates, the elimination of export subsidies and improvements in market access. Some government programs would be replaced by others that have a neutral or restrictive effect on production. Where government subsidies are provided for products that are in structural surplus and where this surplus is exported, it is proposed that the net subsidy should be reduced to 1980 levels. Alternatively, production (or cultivated area) should be reduced to levels applying in 1980, taking account of population increases. Finally, the proposal envisages possible negotiations to determine export prices.

Nordic countries. GATT rules and disciplines on agricultural subsidies would be strengthened and made more operationally effective by bindings on reduced volumes of subsidised agricultural exports, reduced levels of subsidies affecting trade in individual products, and on aggregate ceilings of direct and indirect subsidies either for total exports or agreed sectors.

In the case of countries not subsidising their exports or providing any production support, there should be an undertaking not to introduce production incentives that might lead to renewed imbalances in markets for products in excess supply. Finally, market access should be improved by negotiations on overall levels of support, traditional request or offer proposals, and GATT rules and disciplines.

A10 Special and Differential Treatment (S&D) for Developing Countries

United States. Not mentioned.

European Community. Proposal admits the necessity of extending Special and Differential Treatment to developing countries according to their needs.

Cairns Group. Special and Differential Treatment applies to all elements of the proposal. Application could be through a longer period for implementation of reforms by developing countries than for developed countries, and exemption for certain support measures in developing countries designed to promote economic and social development and not specifically linked to exporting activities.

Canada. Although there are no specific proposals, Special and Differential Treatment could be considered during the second stage when countries develop their national plans.

Japan. Acknowledges that consideration will have to be given to Special and Differential Treatment in implementing reforms.

Nordic Countries. Not mentioned.

A11 GATT Rules

United States. A unique set of rules would be necessary for the ten year transition period when the complete elimination of subsidies and import barriers would be implemented. During the second phase, governments would begin negotiations on new GATT rules to reflect the trading environment that will exist at the end of the transition period.

European Community. More detailed rules should be negotiated on the conditions under which subsidies could be applied, the treatment of measures to increase demand for agricultural products, conditions of access and competition resulting from the existence of state trading and marketing boards, and tighter surveillance of measures taken by countries in implementing their reform commitments. It is envisaged that a framework of rules would be formulated covering health and sanitary matters.

Cairns Group. The proposal includes the following: a prohibition of measures not explicitly provided for in the GATT, including non-tariff barriers, variable levies and minimum import prices; elimination of all provisions for exceptional treatment, including waivers, protocols of accession, or other derogations and exceptions; binding of all agricultural tariffs at low levels or zero; a prohibition of all subsidies and other government support measures, including consumer transfers, affecting agricultural trade except under defined conditions (see section A6, Policy Coverage); a long term framework for sanitary and phytosanitary measures; and full integration of agricultural trade into the generally applicable provisions and mechanisms for consultations, surveillance and dispute settlement within the GATT system, as strengthened through the Uruguay Round.

Canada. All exceptions and waivers would be phased out, access under tariff lines would be bound, and all variable levies, minimum import price systems and other measures affecting market access would be brought under effective and enforceable GATT disciplines.

Japan. The principle would continue to apply that quantitative restrictions should be eliminated. However, quantitative restrictions maintained under waivers would be subject to new GATT rules and there would be improved provisions relating to permitted quantitative restrictions. New rules would be negotiated to cover variable levies and minimum import prices. There should also be a review of exceptions to the general prohibition of quantitative export restrictions.

Nordic countries. GATT rules should be strengthened and made more operationally effective by such devices as bindings on the volume of subsidised exports and the level of direct or indirect subsidies that affect trade. On market access, there should be improved rules applying to the use of variable levies and quantitative restrictions.

A12 Health and Sanitary

United States. Supports harmonisation of health and sanitary regulations in so far as animal, plant and human health and safety are not affected. Rules and regulations governing technical barriers to trade would be expanded to apply more explicitly to processes and production methods, to give greater recognition to the principle of equivalence of laws and regulations, and to provide a procedure for early technical and policy consultations on legal and regulatory changes that have a high potential for affecting trade.

European Community. Rules to be drafted comprising basic principles, criteria for harmonising regulations at international level, and the necessary discipline for dealing with production methods and processes.

Cairns Group. Notification procedures should be established to achieve full transparency. Sanitary and phytosanitary regulations and standards should be harmonised so as to give greater recognition to the principle of equivalence of treatment between countries. Finally, there is a need for agreement on the terms and timetable of steps required to achieve international conformity, including what technical assistance should be made available to exporting developing countries.

Canada. It is proposed to strengthen commitments to prohibit the use of technical regulations as disguised trade barriers, encourage the use of international standards where possible, and agree to minimise the trade effects where harmonisation of technical regulations is not feasible.

Japan. Ensure transparency of quarantine procedures by clarifying the conditions for imposing and lifting import prohibitions, while taking into account relevant international agreements. A consultation process should be available dealing with lifting prohibitions.

Nordic countries. Agreed understanding on application of sanitary and phytosanitary measures, with a reaffirmation of commitment to apply such measures on a non-discriminatory basis, to avoid using such measures as trade barriers, and to harmonise regulations to the extent possible without prejudice to relevant international agreements and organisations.

A13 Role of Other Negotiating Groups

There is no mention of the role of other negotiating groups in the proposals of the United States, Canada and the Nordic countries. Both the

European Community and Japan emphasise that the Uruguay Round negotiations are a single undertaking so that progress on agriculture needs to be balanced by progress in other areas. The Cairns Group proposal refers to the fact that a successful conclusion of negotiations in other related groups will be crucial to the operation of the agricultural trading system.

A14 Sources

General Agreement on Tariffs and Trade. Negotiating Group on Agriculture. United States Proposal for Negotiations on Agriculture. MTN.GNG/NG5/W/14; Geneva, 7 July 1987.

___ Proposal by Canada Regarding the Multilateral Trade Negotiations in Agriculture. MTN/GNG/NG5/W.19; Geneva, 20 October 1987.

___ European Communities Proposal for Multilateral Trade Negotiations on Agriculture. MTN.GNG/NG5/W/20; Geneva, 26 October 1987.

___ Cairns Group Proposal to the Uruguay Round Negotiating Group on Agriculture. MTN.GNG/NG5/W/21; Geneva, 26 October 1987.

___ Proposal of the Nordic Countries (Finland, Iceland, Norway, Sweden). MTN.GNG/NG5/W/35; Geneva, 1 December 1987.

___ Japanese Proposal for Negotiations on Agriculture. MTN.GNG/NG5/W/39; Geneva, 26 December 1987.

Appendix B

AGGREGATE MEASURES OF AGRICULTURAL SUPPORT

B1 Definitions

There are many common measures of intervention in markets by governments. The more common ones are classified in table B1.

The nominal rate of protection (NRP) for any given commodity in a particular country is defined as the percentage difference between the domestic price (P_d) and the world price (P_w) of that commodity due to intervention at the border by means of tariffs or other means of driving a wedge between domestic and world market prices. In algebraic terms, the nominal rate of protection can be defined as:

$$NRP = \frac{P_d - P_w}{P_w} .100$$

$$= (\frac{P_d}{P_w} - 1).100$$

where the ratio P_d/P_w is often termed the nominal protection coefficient.

The nominal rate of assistance (NRA) is defined as the percentage difference between unit gross returns to producers for domestic output (R_d) and the world price of the commodity of interest, due to border measures and other forms of assistance that directly affect producers' unit gross returns. In this paper, this measure is referred to as output assistance. It has also been termed the price adjustment gap (Miller 1987). This measure may be defined algebraically as:

$$NRA = \frac{R_d - P_w}{P_w} .100$$

The effective rate of protection (ERP) is defined here as the percentage difference between, on the one hand, the value added per unit of output at domestic prices (VA_d) incorporating the effects of border measures which influence prices for the specified commodity and the prices of the inputs used in producing it and, on the other hand, the value added at world prices (VA_w) for the outputs and inputs. Algebraically:

$$ERP = \frac{VA_d - VA_w}{VA_w} .100$$

Value added is defined as the return to the primary factors of production (land, labour, capital) used in a particular activity or industry and is measured as the value of the final output less the cost of purchased intermediate inputs.

Table B1: CLASSIFICATION OF MEASURES OF ASSISTANCE BY POLICY MEASURES INCLUDED

Policy measure	Nominal rate of protection	Nominal rate of assistance	Effective rate of protection	Producer subsidy equivalent(a)	Effective rate of assistance
Assistance to output					
Via market prices					
- tariffs, export taxes, import quotas	x	x	x	x	x
- two-price schemes	x	x	x	x	x
Via other means					
- export incentives, inspection		x		x	x
- stabilisation activity and funds		x		x	x
- production bounties		x		x	x
- acreage diversion payment		x		x	x
- subsidised marketing costs		x		x	x
Assistance to inputs					
- fertiliser subsidies				x	x
- fuel tax exemptions				x	x
Assistance to value-adding factors					
- concessional credit				x	x
- income tax concessions				x	x
- research and extension				x	x
- disaster relief				x	x
- farm adjustment				x	x
- conservation programs				x	x
Tariff on imports					
- materials			x		x
- depreciation			x		x

(a) The Josling measure of producer subsidy equivalent.
Source: Haszler and Parsons (1987).

The effective rate of assistance (ERA) is defined as the percentage difference between the value added per unit of output measured with the assistance structure (assisted valued added = AVA) and in the absence of the assistance structure (unassisted value added = UVA). Algebraically:

$$ERA = \frac{AVA - UVA}{UVA} .100$$

This measure takes account of assistance to output, to purchased intermediate inputs (for example, fertilisers) and to value-adding factors (for example, land and capital), and of the direct effect on prices of intermediate inputs of protection given to industries producing the inputs.

All the measures listed here can be negative as well as positive. In addition, all these measures can be expressed as subsidy equivalents. A subsidy equivalent is defined as the single monetary value needed to compensate the recipients of benefits of policy interventions for the removal of the particular interventions of interest. While the concept of subsidy equivalents is quite general, it has been given a particular application by Josling (ERS 1987; Webb 1984). His method is distinguished by the use of recorded budgetary expenditure wherever possible in computing subsidy equivalents and by the range of policy measures usually covered.

The policies usually included in calculating Josling's subsidy equivalent measure encompass border measures and other forms of assistance to outputs and inputs but not the effects of any increases in prices of intermediate inputs due to assistance provided to the industries producing these inputs. In terms of its coverage, therefore, Josling's measure lies between the nominal rate of assistance and the effective rate of assistance.

It is customary to compute both producer and consumer subsidy equivalents. The producer subsidy equivalent is defined as the income subsidy needed to compensate producers for the removal of support provided through the types of programs designated earlier. The consumer subsidy equivalent is the subsidy needed to compensate consumers for the removal of the specified policies. Both measures can be expressed in percentages of the final value of production, including the effects of the policy intervention.

B2 Aggregate Measures and the Uruguay Round

A number of the major agricultural negotiating proposals tabled for the Uruguay Round indicate a potential role for producer subsidy equivalents in the negotiations (appendix A).

The producer subsidy equivalent (PSE) is a relatively comprehensive measure of assistance and so provides a broad overview of policies specifically directed at the farm sector. The PSE measure has tended to be defined flexibly to reflect the specific policy issues being addressed, and continues to evolve (OECD 1987b; ERS 1987). However, the PSE is not a measure of effective assistance because, typically, it takes no account of tariffs and other measures which might change the costs of inputs used by agriculture (see table B1). Thus the main advantage of using PSEs is the ability to make a crude aggregation of widely differing policies into one simple indicator. This means that PSEs have a useful role as a policy monitoring device, particularly when they are used over medium to long term

horizons when short term variations in measured assistance due to factors such as exchange rate changes are likely to be relatively less significant.

Despite these advantages, the standard PSE would be a relatively poor instrument for negotiating reductions in trade distortions. This is because the standard PSE is not necessarily a good measure of trade distortions since it relies on a simple aggregation of assistance provided through the budget and on relatively constrained estimates of the assistance provided through interventions in markets. Under the generally accepted methods for calculating PSEs, a dollar spent on supporting research or on assistance designed to promote farm adjustment, for example, is considered equivalent in its impacts to a dollar spent on a direct output or export subsidy. Thus PSEs in their present form do not take account of the relative distortive effects of different policies on agricultural production, consumption and, therefore, trade.

Reflecting these deficiencies, the emphasis in the negotiating proposals tabled in Geneva has been on a 'modified' PSE. The modified PSEs remain to be more closely defined. But it seems clear that the intention in identifying these variants to the PSE is to help to relate more closely the trade volumes under the given set of policies to estimates of the levels of production, consumption and trade in the absence of those policy interventions.

Given these points it is not clear just how PSEs might, or should be, used in the Uruguay Round. In particular, it is unclear whether PSEs might be best used in a negotiating or a monitoring role, or both, and just how any reductions in assistance based on the PSE measure should be specified and applied.

B3 Difficulties in Measuring Assistance

Whatever the role of PSEs in the GATT, there will be problems in their use. Some of the most commonly discussed problems in measuring agricultural assistance include the distinction between measures of policy transfers and measures of trade distortions, which has been referred to already, the treatment of supply controls, the small country assumption implied in the measures, the choice of reference prices, the treatment of quantitative controls on trade, the issue of excess feed costs, and exchange rate variations.

(a) Trade distortions

It is difficult to think of any policy measures which do not influence agricultural trade, no matter how well they might be decoupled from current production and trade. For example, even direct income support payments and disaster assistance are likely to influence farmers' expectations of the returns and risks associated with farming. So the level of aggregate agricultural production will be affected by such policies. Even the mix of output can be affected if the allegedly decoupled assistance is channelled to particular industries facing income problems. Nevertheless, priority in the Uruguay Round is being given to modifying policies which have the greatest trade distorting effects.

The ranking of policies in terms of their impacts on trade is likely to vary a great deal between commodities and countries. But the following taxonomy, based on classifications used by the Industries Assistance

Commission (1987) and arranged from the most distorting policies to the least, may provide a broad guide:

- Assistance to output. Because they act directly on output, these measures are likely to have the greatest trade distortion effects, especially in the short run, and they include tariffs, import quotas, two-price schemes, production and marketing assistance paid directly to farmers and direct export subsidies.

- Assistance to intermediate inputs. These measures include input subsidies, fuel tax benefits, and tariffs on imported inputs and are listed second because, unless inputs are perfect substitutes, changing the price of one input cannot have an effect on producers' returns equivalent to a direct output subsidy.

- Assistance to value-adding factors. These measures include income tax concessions, disaster relief, assistance to research and extension, all of which, in the longer term at least, will increase the value of the primary factors of production.

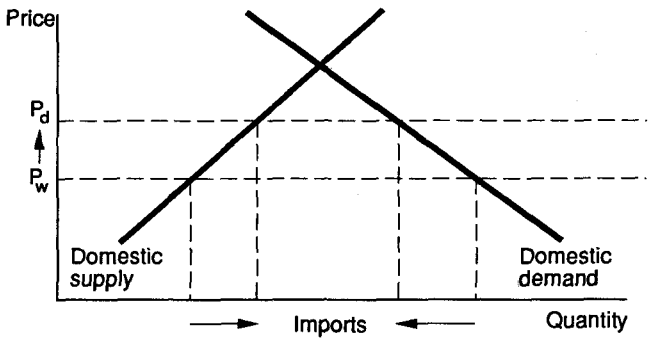
- Decoupled and adjustment assistance. These forms of assistance are least likely to affect production, demand and trade, particularly in the short run.

Within the category of assistance to output, direct export subsidies and assistance to producers financed by transfers from consumers are likely to have the greatest trade distorting impacts. This is intuitively obvious in the case of export subsidies which influence trade directly. In the case of assistance funded by transfers from consumers the point is illustrated by figure B1. The figure shows the case where a tariff, equivalent to (Pd-Pw), is used to support domestic prices. In the illustration the country's imports are reduced because of both an increase in domestic production and a drop in consumption. If the assistance to producers were funded from taxes, consumption would not be affected and trade would, therefore, be larger than in the case shown. Consequently, any moves to shift the funding of agricultural support from budget sources to consumers, as suggested recently for the United States (Runge and Halbach 1987), would be more damaging to trade.

Given these arguments, it may be possible to use a simple indicator to measure desirable policy changes. The indicator proposed is the ratio of the consumer subsidy equivalent (CSE) to the standard producer subsidy equivalent (PSE). As indicated earlier, the CSE is analogous to the PSE and can be calculated as part of the process of updating PSEs so their estimation presents no insuperable problems. The CSE is negative where consumers are taxed to support producers, so the CSE/PSE ratio would be negative and would measure an important component of the trade distortions in many cases. The higher the (absolute) value of the ratio, the greater is the share of assistance to producers that is funded by consumers and, other things constant, the more trade distorting is the policy regime. Where the policy regime taxes consumers to assist producers, the CSE/PSE ratio is also a measure of the transparency of a country's policies and of the accessibility of its markets. This is because if assistance is not funded by consumers through the market, it is funded through a variety of budgetary measures. Such expenditures are easy to monitor, and assistance through the budget implies that the domestic market is open to imports.

Figure B1: Impacts of changes in price on trade

ABARE chart



The ratio can still be interpreted as a measure of trade distortion in cases where producers are taxed to assist consumers. In such a case the trade distortion would be an addition to trade compared with the free market situation. However, where producers are taxed to assist consumers, the ratio does not necessarily indicate transparency or accessibility of the domestic market to international trade. Furthermore, the interpretation of the ratio is even less straightforward when it is a positive value, that is, when both consumers and producers are subsidised.

(b) Supply controls

Some countries attempt to control output by trying either to minimise the production impacts of their policy measures or to gain increases in world prices for commodities where they can influence the market outcome. This is the case, for instance, in the United States under the deficiency payments, set-aside and conservation programs. To include payments to US producers under these programs in the PSE measures raises questions about the overall effects of such programs.

It seems reasonably clear that payments to producers for placing land under conservation programs which exclude use of the land for agriculture do not represent assistance to current output. Such payments may enhance productivity of land in the longer term, but in the short run they simply compensate farmers for current output foregone and effectively represent direct income support. Consequently, such assistance has not been included in the definition of assistance to output that is to be reduced under the policy package developed in the main body of this report.

However, payments under the US target price programs have been included. To the extent that the US target price/set-aside programs result in some reduction in output in the short run (see also appendix D), some of the target price payments may be thought to also represent compensation for forgone output. Nevertheless, the method used to calculate PSEs in this case does compare the change in producers' returns with and without the program. That is, the PSE does not overstate the support given to farmers. However, the standard PSE would overstate the trade distortions arising from these policies in the case that target prices are higher to compensate for any reduction in output caused by the set-asides.

(c) The large country issue

Another important problem in measuring assistance is that some countries are large enough to influence world prices and trade by their own actions. The United States (for wheat, sugar and beef), Japan (beef) and Australia (wool) are 'large' countries in this sense. If output in these countries is supported by assistance, and the increased output stimulated by the assistance affects world trade, the world price is affected also (figure B2). The world price is used as a reference point in measuring assistance; for a 'large' country its assistance drives down the reference point used for measuring that assistance, the result is an overstatement of the assistance provided by large countries.

This point would be particularly important if the policy focus was on full liberalisation of agricultural trade. However, if the emphasis is on gradual and partial dismantling of farm support, use of the ruling world price as a benchmark for measuring assistance should involve less error than in cases of full trade liberalisation. Consequently the key point of the large country problem is that as farm support programs are cut back, the changes in measured assistance will reflect increases in world prices as well as the direct changes in assistance (Miller 1987).

(d) Reference prices

Assistance provided through the price mechanism is measured via the wedge between the domestic and world prices. For these wedges to be calculated accurately, the price comparisons must be for the same quality of the commodity, at the same time and at the same place. Where comparable direct quotations are not readily available, information on freight costs and quality differentials can be applied to some reasonably comparable commodity. In either case, the data requirements are reasonably large. This has led to suggestions for the use of common reference prices. Unless the necessary quality and other adjustments are made, this can have important implications in trade negotiations, as can be seen from figure B3, which shows relationships between prices for French wheat and a series of world wheat prices that might be used as reference prices. Of those shown, the preferred ratio is that between the domestic price of breadmaking wheat at Chartres and the fob export price for wheat of the same quality at Rouen, the nearest shipping port. While the trends in the relevant price ratios are quite similar, the levels are not. Using common reference prices to compute PSEs which are to be used in negotiating reductions in assistance implies differing degrees of reduction in returns to producers in individual countries.

(e) Quantitative restrictions

The standard approaches to measuring PSEs also involve approximations in handling quantitative restrictions to trade. These quantitative restrictions can be implemented by way of formal quotas, by informal quotas implemented through the powers of state trading authorities or by way of so-called 'voluntary' export restraints. The impacts of these different quantitative restrictions on markets can vary, so the accuracy of the measures of assistance from such instruments will differ. In the case of voluntary export restraints, for example, prices in the exporting countries as well as in the importing country can be affected. Since the world reference price can be influenced in this case, the assistance measured by the PSE method is likely to understate the true support provided through such policies.

Figure B2: Protection and world trade

ABARE chart

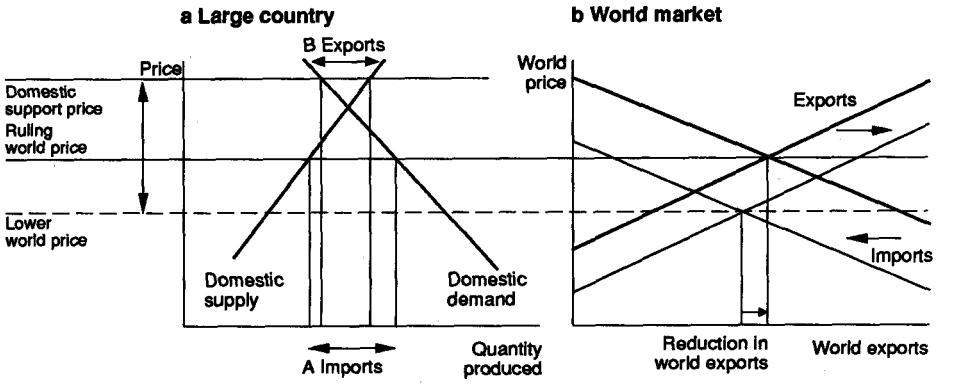
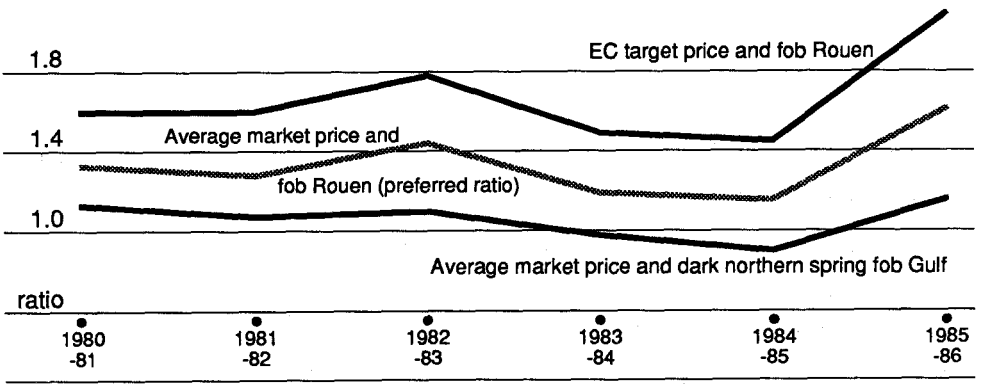


Figure a shows a 'large' country which imports an agricultural commodity at the ruling world price. The country is an importer because domestic demand exceeds domestic supply at that price. It imports the amount shown by arrow A. With the introduction of a domestic price support scheme, the large country becomes an exporter of that commodity. The higher domestic price simultaneously increases farmers' incentives to produce and reduces domestic demand. The quantity exported is the difference between the increased domestic supply and the reduced domestic demand, and is shown by arrow B.

The consequences of the large country's policy for world trade are shown in Figure b which depicts the world market for that commodity. As a result of the large country's new status as an exporter, the export supply line shifts to the right and the import demand to the left as shown by the arrows. The world price must fall to induce importing countries to absorb the added exports.Other exporters of the commodity must face a lower world price.

Figure B3: Domestic prices of French wheat relative to world prices

ABARE chart



(f) Excess feed costs

The conventions in calculating assistance vary. In the estimates published recently by the OECD (1987b) there is no allowance in the measures of livestock PSEs for any 'excess feed costs'. These are defined as the costs to livestock producers of protection provided to grain and feed producers through support of their product prices. The estimates of effective rates of assistance published by the Industries Assistance Commission have for long taken account of such costs.

The distinction can be important in terms of the amounts of adjustment expected of livestock farmers and compared with other farmers if policy reforms are made on an across-the-board fixed proportionate basis. As indicated in table B2, a given proportionate across-the-board cut in assistance can involve different proportionate declines in effective returns to producers who face excess feed costs. The magnitude of the difference will be determined by the importance of feed costs in livestock costs, by the degree of support to livestock producers relative to that given to grain

Table B2: IMPLICATIONS OF EXCESS FEED COSTS FOR REDUCTION IN PRODUCER SUBSIDY EQUIVALENTS

Item	Unit	Without excess feed costs	With excess feed costs	
			Livestock only(a)	Livestock and feeds(b)
Free market price	$/t	1 000	1 000	1 000
Plus producer subsidy equivalent	$/t	600	600	600
Equals administered gross return to producers	$/t	1 600	1 600	1 600
Less excess feed costs	$/t		300	300
Equals effective return to producer with assistance structure	$/t	1 600	1 300	1 300
Less 50 per cent cut in producer subsidy equivalent	$/t	300	300	300
Plus 50 per cent cut in excess feed costs	$/t			150
Equals effective return to producer after liberalisation	$/t	1 300	1 000	1 150
Change in effective return to producer after liberalisation	%	-19	-23	-12

(a) Reduction in assistance to livestock producers only. (b) Reduction in assistance to livestock feed producers.

and feed producers, and by the form of assistance to grain and feed producers. This discussion of the excess feed costs issue is simply an illustration of the more general point that effective rates of assistance are a more comprehensive measure of assistance than producer subsidy equivalents and therefore will tend to measure net assistance to an activity more accurately.

(g) Exchange rate variations

In many cases calculation of PSEs involves comparisons between domestic prices, in domestic currency, and world prices in some other currency. Consequently exchange rates frequently feature explicitly in the calculation of PSEs. Since the 1970s, exchange rates have been quite volatile. Such variability has implications for the year to year variability of measured assistance. This has raised questions about how to handle exchange rates in measuring PSEs. The economic issue is that exchange rates are just one of the factors shifting demand and supply. There is, therefore, no a priori reason for treating exchange rates differently from any other shifters such as variations in weather or government policies affecting aggregate demand. The problem is that where exchange rates are volatile, it can be difficult to determine whether changes in measured assistance represent short or longer term factors. If the changes are short term, there may be minimal consequences for resource allocation of not fully adjusting policies and support in response. Thus the benefits of modifying policies may be small.

One approach to the problems due to fluctuating exchange rates is to compute the PSE without any special allowance for exchange rate changes. Then, if the measured PSEs appear to be too variable to guide policy, they could be smoothed over some period like three years. The period of the moving average would be determined by how expectations in that market are formed as well as by administrative convenience. Such smoothing effectively implies that society has determined that agriculture should not be expected to bear the full adjustment costs in every period. The case for such views rests on the possibility that the costs of adjusting outputs and resources in every period may outweigh the benefits. However, in cases where the smoothed values of the PSE are used to dictate particular policy actions, from time to time agriculture would have to adjust by more than if the actual values of the PSE had been used to determine policy decisions.

Appendix C

SUPPORT ARRANGEMENTS FOR MAJOR AGRICULTURAL COMMODITIES IN THE UNITED STATES, EUROPEAN COMMUNITY AND JAPAN

C1 United States

(a) Wheat and feed grains

The US grain support arrangements consist of a series of programs in which growers may cooperate if they wish. Support payments under the programs have been large in recent years and participation rates have been high (over 80 per cent). The main elements are:

- Target prices for income support.

- Loan rates providing an effective price at which producers can forfeit grain to the government's Commodity Credit Corporation.

- Deficiency payments of the difference between the target price and the higher of the average market price over the first five months of the season or the loan rate.

- An area reduction program under which participating growers undertake not to plant a specified proportion of an historically determined base area for the specified crop. Receipt of program benefits is contingent on compliance with program provisions.

- In some years an additional proportion of the area base is directed from production under paid area diversion programs under which the government pays a specified amount per bushel of a standard program yield on the area diverted.

- Grain producing land makes up a large proportion of cropping land to be diverted into a ten year conservation reserve of 40-45 million acres to be diverted over the period 1986-90 under the 1985 Food Security Act.

- Under the 1985 Food Security Act, a significant proportion of program benefits is paid in the form of negotiable certificates that are backed by government stocks, enabling the release of government stocks onto the market. Otherwise, release of government stocks is subject to price triggers which in recent years have been set well above market prices in recent years.

- An Export Enhancement Program has applied since mid-1985. Under that program bonuses of Commodity Credit Corportion stocks are made to successful tenderers for specified sales to specified markets. By 1987-88 about half of US wheat exports was with Export Enhancement Program assistance varying between some US$35/t and US$40/t at a time when market prices were around US$115/t to US$120/t.

- Decoupling elements designed to weaken the link between support and production incentives were introduced into the 1985 Food Security Act. They initially allowed producers to receive 92 per cent of full deficiency payments provided they planted at least 50 per cent of the area base to the program crop. These provisions have not been widely used, largely, it appears, because of restrictions on what could be

planted on the remaining 50 per cent. From the end of 1987, these decoupling measures have been modified to allow 92 per cent of full deficiency payments even if growers plant none of their base area with the program crops.

(b) Rice

Policies to support the US rice industry are incorporated in the rice program provisions of the 1985 US Food Security Act. In addition to the grain support arrangements outlined above, growers can liquidate their loans at the marketing loan rate. The marketing loan rate is equal to the world price or to 50 per cent of the loan rate, whichever is higher. It allows growers to pay back only a proportion of the original amount borrowed from the Commodity Credit Corporation. Whereas the loan rate is effectively the floor price growers receive for their rice, the lower marketing loan rate effectively becomes the price at which it is sold to users.

(c) Sugar

Income support is managed through the operation of several policy instruments which raise the domestic price of sugar. The policy operates at no net fiscal cost to the US government. Loan rates provide an effective price at which producers can forfeit sugar to the government. In addition, a market stabilisation or target price is set at a level at which it is considered profitable for a processor to market sugar commercially. To ensure that sugar is not forfeited to the government, the domestic price is raised above the market stabilisation price by imposing quotas on imports of sugar, which are subject to a small tariff of up to 2.8USc/lb. Developing countries are exempted from paying the import duty. This, together with the high US domestic price that they receive for their sugar, formed part of the US Caribbean Basin Initiative of 1985.

(d) Soybeans

Soybeans receive far less assistance than other major export crops, the main support being through commodity loans and inventory control under the provisions of the US Soybean Loan program.

All producers have the option of placing soybeans under government loan and receiving the loan support rate. The 1985 Food Security Act declares that the basic loan rate should be US$5.02/bushel, but gives the Secretary for Agriculture discretionary authority to lower the base rate by up to an additional 5 per cent to maintain the competitiveness of the US soybean industry. That authority was exercised in 1986-87, and the loan rate was maintained at the reduced rate of US$4.77/bushel in 1987-88. Loans can be redeemed prior to maturity (nine months) and the soybeans sold on the cash market. If producers do not redeem their loans, the soybeans become government property. Non-redemption of loans takes soybeans off the cash market by placing them in government stocks and keeps the US cash price from falling below the loan rate. The release of government stocks is subject to price triggers, which over recent years have been higher than market prices.

(e) Beef

US beef policies can be grouped into export assistance programs and import controls.

There are two export assistance programs which have been relevant to beef, the Dairy Herd Buy-Out Program and the Targeted Export Assistance Program.

To ease the pressure on US cattle prices of the Dairy Herd Buy-Out Program, the US Department of Agriculture was mandated under the 1985 Farm Bill to purchase and export 200 million pounds of red meat. This was done by subsidised sales to destinations such as Brazil, Venezuela and the European Community.

The Targeted Export Assistance Program was authorised under the Food Security Act of 1985 and assists export promotion programs of US producer groups allegedly disadvantaged by 'unfair' trade practices of competitor nations. Under the program, the Commodity Credit Corporation provides producer groups with generic commodity certificates which may be redeemed for Commodity Credit Corporation commodities for use in promotion projects in a targeted market.

The import controls include the US Meat Import Law and tariffs on beef imports. The Meat Import Law is aimed at restricting imports of beef and veal at times of high US beef production and hence low beef prices. US imports of beef are governed according to a quota formula, a minimum global import level and a Presidential discretion clause. The quota level for each year is determined through the use of a formula which adjusts the base quota (the average import level for the years 1969-77) on the basis of US beef and veal production and the US output of cow beef. Quotas are imposed when imports exceed the trigger level (110 per cent of the adjusted base quota). The minimum global import level of 1250 million pounds was introduced in 1979 to satisfy GATT requirements. The Presidential discretion clause allows the President to suspend quotas proclaimed under the Meat Import Act when cow beef production is low. However, when cow beef production is high the President is not allowed to intervene unless, during a declared national emergency, the President proclaims that suspension of quotas is in the nations's security interests, or unless there is a shortage due to a national disaster, disease, or major market disruption.

To avoid the imposition of quotas on beef imports, the US Government typically has entered into bilateral voluntary restraint agreements on beef imports with supplying countries. The voluntary restraint agreements are normally determined on the level at which quotas would otherwise be triggered. The incentive for supplying countries to enter voluntary restraint agreements is the possibility that quotas will be invoked at a lower level, should the total level of imports be expected to exceed the trigger level. Voluntary restraint agreements have been entered into three times in the 1980s - in 1982, 1983 and 1987. Only once, in 1976, have quotas actually been imposed.

Tariffs on beef imports are imposed on 'favoured' countries such as Australia at US2c/lb and on 'other' countries such as the USSR at US4c/lb.

(f) Dairy

Domestic price support measures and strict controls on imports have been used to protect the US dairy industry from international competition.

Under the Federal Milk Marketing Order Program, regionally differentiated milk marketing orders, covering about 95 per cent of milk eligible for sale as market milk (fresh milk sold for drinking), provide for

minimum prices to be paid to dairy producers for market milk. In addition, the government sets and supports a minimum price for manufacturing milk under the Price Support Program. The Commodity Credit Corporation purchases unlimited quantities of dairy products (butter, cheese and skim milk powder) at administratively determined prices which reflect the minimum support price for manufacturing milk. This system also indirectly supports the price of milk used for other purposes. Milk is classified and priced according to its end use. The pricing base for all classes of milk is the Minnesota-Wisconsin manufacturing milk price, which, in turn is underpinned by the support price.

Restrictions on the import of milk and dairy products are implemented in order to maintain the support price level. Import quotas are authorised under Section 22 of the Agricultural Adjustment Act 1933 and the present levels were established under the Tokyo GATT Round. Small quotas apply to butter, skim milk powder, wholemilk powder, whey and dried buttermilk. The maximum total quota for cheese is 110 kt per year. Cheese imports tend to supply around 5 per cent of US domestic consumption. Casein is not regulated and all requirements are met by imports (around 100 kt annually).

The US exports significant quantities of dairy products as food aid under Public Law 480. The 1985 Food Security Act includes a mandate for the government to export 150 kt of dairy products, including at least 100 kt of butter and 20 kt of cheese, in 1986, 1987 and 1988. In addition, there is an export incentive program, allowing for the subsidised sale of dairy products, whereby exporters would be paid by the government in cash or commodities of equal value. Few, if any, sales have been included in either of these programs in 1986 or 1987, apparently because of insufficient stocks.

In response to large dairy surpluses and high budgetary costs in the early 1980s a number of policy measures were implemented. Under the Omnibus Budget Reconciliation Act 1982, the support price was frozen for two years and levy deductions applied to offset government costs. The Dairy and Tobacco Adjustment Act 1983 provided for a lowering of the support price and further reductions linked to government purchases. A voluntary milk diversion program, funded by a producer levy, was also implemented. The 1985 Food Security Act allowed for the implementation of a dairy termination program for an eighteen month period (commencing April 1986) and financed by a producer levy. The program resulted in the slaughter of 1.55 million dairy cattle (7 per cent of the dairy herd). The support price was effectively lowered and between 1988 and 1990 it will be linked inversely to expected government purchases.

C2 European Community

(a) Wheat and barley

The mechanisms employed by the European Community to support prices are based on managing markets, by various instruments, in such a way that prices to producers are maintained at levels well above world prices.

The target price is an indicative price on which other support prices are calculated and is set on cereals at Duisburg (Germany), deemed to be the main deficit area. It is equivalent to the intervention price plus the cost of transport from Ormes (France) to Duisburg. Intervention prices for cereals provide a floor below which market prices should not fall. The

prices are set administratively each season and are largely based on market conditions in Ormes, deemed to be the largest EC grain surplus area. The prices are maintained by Intervention Purchase Arrangements whereby government agencies purchase grain at the effective intervention price set by the Community.

The threshold price represents the lowest price at which imported cereals can enter into the European Community. It is equivalent to the target price less the transport, handling and storage costs for delivery from ports. To ensure that imports do not undercut local prices, a variable levy is charged on all imports. The variable levy is equal to the difference between the world price (third country offer prices) and the threshold price, when world prices are below the threshold price.

Export restitution payments are made to traders to bridge the gap between internal market prices and world prices. Such payments ensure that EC exported grains are competitive on the export market.

The fundamental mechanisms and support objectives for wheat and barley have basically remained unaltered since the late 1960s. Most changes that have occurred since then have been restricted to adjustments in the operations of the mechanisms or the level of prices. For example, tighter quality restrictions have been placed on grain entering intervention, and the operation of intervention stores has been limited to the months between October and May for most member states.

Under the recent stabiliser agreement a guarantee threshold of 160 Mt was set for cereals. Production above this level would incur a 3 per cent support price reduction lagged by one year. There is also provision for an additional co-responsibility levy of up to 3 per cent in addition to a current standard 3 per cent levy in all off farm sales.

(b) Rice

In most important aspects the EC rice regime is similar to that applied to cereals, with three main support prices. The intervention price available to producers is expressed in terms of unprocessed (paddy) rice whereas target and threshold prices are expressed in terms of husked rice. The target price takes into account milling costs involved in dehusking rice, transport costs from North Italy to Duisburg and a 'market component' of about 11 per cent of the intervention price. As with cereals the intervention price is the basic internal support price decided annually, with fixed monthly increments. The threshold price is derived from the target price and is applicable on imports into the Community to ensure that import prices do not undercut domestic support arrangements. Import levies are applied to ensure that threshold prices are enforced on imported rice.

Export restitutions are also available for EC rice exports to bridge the price gap between EC domestic prices and lower export market prices.

More recently, the European Community, which is a net importer of rice, has introduced production assistance on long grain rice varieties which are not usually grown in the Community.

(c) Sugar

Under the EC sugar policy an intervention price is set at a level which has usually been above the world price, acting as a floor price to the

domestic white sugar market, and a guaranteed minimum price is paid to growers. The quantity of supported sugar is constrained by quotas, while there are no limits on unsupported sugar.

A system of levies and rebates on imports protects the market from imports. The difference between the threshold price (set in relation to the intervention price) and the world price is paid as a levy. If the world price exceeds the threshold price a rebate is paid.

Exports of supported EC sugar receive the world price and therefore incur losses. To cover this, exporters are paid rebates financed by industry levies. Any deficits are temporarily financed from the EC budget. To restrict the cost of export rebates, production controls are applied. Sugar for 'A' quota receives the full intervention price although this sugar is levied 2 per cent to pay for export rebates. 'B' quota sugar is normally levied 39.5 per cent of the full intervention price to pay for export rebates. 'C' quota production is unsupported. It must be exported and therefore receives only the world price. An extra levy called the elimination levy is currently paid by producers of A and B quota sugar to help reduce accumulated budget expenditures on export rebates.

The EC sugar regime has transformed the Community from a net importer in the mid-1970s to being a net exporter in the mid-1980s. Export refunds in recent years have varied between 200 and 300 per cent of world prices.

(d) Oilseeds

Major oilseeds grown in the European Community are rapeseed, sunflowerseed and relatively small areas of soybeans. Price support is afforded to growers of rapeseed and sunflowerseed through an intervention price system of crusher subsidy payments. The intervention price is set slightly below an indicative target price and is designed as a means of establishing a minimum return to producers. This is implemented by a subsidy to crushers equivalent to the differential between the domestic EC target price and assessed world prices. Such payments ensure crusher competitiveness by compensating for higher EC seed prices.

Subsidy levels have increased dramatically over the past four years due to decreasing world prices for oilseeds. But there is a limit to the level of subsidy paid, primarily due to the rapidly growing budgetary cost of support to oilseeds production. If production exceeds an annual threshold level, a progressive reduction of the price support levels for farmers is implemented - a 1 per cent reduction in price for each 1 per cent that production of each oilseed crop exceeds its specified maximum guaranteed quantity, but with a maximum reduction of 10 per cent. The recent in-principle guarantee threshold agreement establishes a 0.45 to 0.5 per cent price penalty for each percentage over threshold production, without any limit.

Although the European Community is a deficit region for oilseeds, and imports are permitted relatively unimpeded entry due to previously negotiated GATT bindings, support arrangements are resulting in a rapidly expanding EC industry.

(e) Beef and veal

The EC beef and veal regime provides for a system of price support mechanisms for the internal market by way of intervention purchases and

private storage aids, supplemented by a system of variable import levies, tariffs and export subsidies to specified destinations. In addition, producers in some EC countries benefit from direct payments of different types of premiums.

Support prices are determined by the 'guide price' which is the focal point for the various mechanisms within the beef and veal regime.

Intervention buying occurs at the intervention buying-in prices, which are calculated for each member country in relation to the beef market price prevailing in that country (reference price). For beef intervention to operate in any one member state, the EC average deadweight market price for a quality of beef must be below 91 per cent of its EC intervention price and simultaneously the average market price for the same quality in the member state concerned must be below 87 per cent of the EC intervention price.

Additional support to EC beef and veal producers in the form of various premiums has accounted for about 10 per cent of the total guarantee expenditure over recent years. The United Kingdom, unlike any other member state, relies mainly on the variable slaughter premium to support cattle prices. Other premiums include the calf premium, the suckler cow premium, the special beef premium, and the hill compensatory allowance.

Most categories of cattle and beef are subject to variable import levies, in addition to customs duties, which are mainly fixed and permanent. The actual rate of import levy applied is calculated by a formula which involves both the reference and guide prices. For example, when the reference price is between 90 and 96 per cent of the guide price, the rate of levy applied is 110 per cent of the basic levy. This effectively precludes imports except for those entering under a range of multilateral and bilateral concessionary import schemes.

EC beef and veal market prices are supported by export subsidies, which are normally needed to dispose of the surplus production generated by the regime, since EC support prices are generally well above world prices. The levels of these subsidies vary between export markets. Unlike the import levies, the formula for calculating the export subsidies is loosely defined and such subsidies have varied considerably over time.

The EC export subsidy expenditure on beef and veal was about 1.3 billion ECU or 49 per cent of the total expenditure on beef and veal in 1986. Since the second half of the 1970s the European Community has changed from being a substantial net importer of beef and veal to a large net exporter. In absolute terms the Community is the world's largest beef exporter with export refunds which vary from 50 per cent to 70 per cent of market price depending on destination.

(f) Dairy

The EC dairy support regime consists basically of supporting the price of milk to ensure a 'minimum return' for farmers. Since domestic dairy prices are usually set higher than world prices, there have been strict controls on imports. Subsidies are also applied to dairy exports.

The main price for the support system is the target price for milk. This price forms the basis for deriving intervention price support levels of variable import prices for dairy products.

Intervention purchasing of specified dairy products by government agencies sets a floor for dairy products related to the target milk prices through a system of conversion factors and manufacturers' margins. Intervention prices are set for butter, skim milk powder and certain categories of cheese.

The variable levies control the prices at which dairy products are imported. They are the differences between threshold prices, which are the 'at port' equivalents of the target price, and world prices (usually the lowest available cif offer prices). The threshold price represents the price at which imports may enter the Community market. This system effectively excludes imports of dairy products by the Community, except where there are special concessions (for example, access of New Zealand butter to the United Kingdom at low levy rates and of small quantities of cheese negotiated both under the Tokyo GATT Round and bilaterally).

Export restitutions are paid to exporters of most dairy products to enable them to compete on world markets. The export refund is based on the assessed differential between EC market prices for the product concerned and the prevailing international prices.

A co-responsibility levy system was introduced in 1977. Under that system farmers were obliged to contribute to the cost of disposing of surpluses. These co-responsibility levies are currently 2 per cent of the milk target price. Subsidised domestic sales of butter (Christmas sales) and skim milk powder (for stock feed) have also been a common means of reducing dairy stocks.

In April 1984, milk quotas were introduced for a five year period. Between 1985-86 and 1988-89 the guaranteed quantity was set at 98.15 Mt of milk (in addition there is a direct sales quota 4.26 Mt). Following a continuous buildup of dairy stocks and difficulties in containing milk production within the quota limits, additional measures have been introduced including quota reductions to a target level of 90.9 Mt, higher overquota penalty levies and limits on intervention purchases of butter.

While these measures have provided some cuts in assistance and production, EC production remains well above domestic requirements and export mechanisms are still geared towards high level surplus export activity. The Community has also used quota applications as an excuse for enforcing only limited price disciplines, thereby ensuring the capitalisation of dairy quotas.

C3 Japan

(a) Wheat and barley

Japan once produced sizeable quantities of wheat and barley, but in the 1960s and early 1970s production declined significantly. The self-sufficiency ratio for wheat declined from 39 per cent to 4 per cent between 1960 and 1973. The decline was due to the increased profitability of rice growing and the movement of farm labour into off farm employment.

The government purchases all wheat and barley offered by producers at fixed prices. Producers are not obliged to sell wheat and barley to the Japanese Food Agency but in practice virtually all wheat and barley is sold to the agency because of the attractiveness of the government's purchase

prices. An exception is malting barley which is grown under contract between producers and brewing companies.

Imports of wheat and barley, which represented around 85 per cent of requirements of each in 1985, are made under government licenses by authorised private firms. All these imports are subsequently resold to the Japanese Food Agency. Barley imports are duty free but flour imports are subject to a 12.5-25 per cent duty.

The program for wheat is intended to operate as a self-financing subsidy. The government makes a loss on each tonne of domestically produced wheat it purchases because the price at which it purchases the wheat is greater than the price at which it resells the wheat to consumers. However, it makes a profit on each tonne of wheat imported into Japan because its sale price to consumers exceeds the price it pays to importers. The sale prices of domestic and imported wheat differ because of differences in quality (domestic wheat is inferior to imported wheat).

There is a precise formula for setting government purchase prices for wheat and barley. The prices of domestically produced wheat and barley are based on a parity price which is reviewed every five years. The prices at which the government sells the wheat and barley are based on the general cost of living, rice prices and other economic conditions. The price of two-row barley for brewing is decided through negotiation between the farmers' representatives and users.

Imports of wheat and barley for feed purposes are made by the Japanese Food Agency, which then sells it to feed manufacturers by competitive tender. Although in principle these sales are influenced by the Feed Demand-Supply Stabilisation Law, in practice the sales prices have not deviated much from purchase prices (international prices).

In 1987 the government announced the abolition of the approach being followed for determining the producer prices of wheat, soybeans and barley. Under the new system the producer price will be determined by the production cost of the most efficient farmers. This should result in some lowering of price to producers and consumers. The plan was implemented for soybeans with the 1987 crops, and it will be implemented for wheat and barley this year.

(b) Rice

Rice is the most important farm commodity produced in Japan and is grown by 84 per cent of Japan's 4.4 million farm households. The Japanese Food Agency is the body largely responsible for administering the industry. Rice policy encompasses a number of measures including supply control, marketing licenses, state trading, and government determined prices.

Rice is sold either to the government (government marketed rice) or through voluntary marketing channels (voluntary marketed rice) in approximately equal proportions. The Japanese Food Agency closely monitors the quantity of rice entering the voluntary marketing channel. Rice dealers are licensed by the government.

About 70 per cent of rice dealers are cooperatives and they handle about 95 per cent of rice. The retailers are also licensed. Not all rice enters these two marketing channels. Estimates put the quantity of rice retained by farmers (who use it themselves, as gifts or for sale on the black market) at around 4 Mt.

To import or export rice Japanese Food Agency permission is required and all rice imported must be sold to the agency. Although each year some rice is imported for specialised uses, only occasionally has domestic production not been able to meet domestic demand, making imports necessary. In recent years, shortfalls in domestic supplies have not been a problem, but rather there have been surpluses as production has not adjusted fully to declining domestic consumption.

For the government marketed rice the price that producers receive is set according to a production cost and income compensation formula which is based on the production costs of rice, general price trends and other economic conditions. The cooperatives participate actively in the price negotiations and the price farmers receive reflects the political climate in Japan at the time the price is determined. The sale price to wholesalers is also set by the government, but unlike the producer price, it does not involve any formula. Factors such as cost of living and the government financial situation influence the level of the wholesale price. Over the last two decades, since the average price at which the government purchases rice from producers has been higher than the wholesale price, taxpayer support has been required to fund the rice program.

The government does not intervene directly in the price negotiations for voluntary marketed rice but it monitors this market closely and so exercises indirect control over price. Subsidies are paid to the cooperatives for storing and marketing the voluntary marketed rice. Producers are provided with subsidies for marketing rice through this channel, and for improving the quality of rice marketed. Prices for voluntary marketed rice are usually 20-30 per cent above those received for government marketed rice, reflecting the differences in quality of rice going through the two channels.

Supply control has been undertaken through several different schemes which have been in operation since 1971. The Paddy Field Reorientation Program (1978-86) aimed at reducing rice production to bring it into line with domestic demand, through the diversion of paddy land to other crops. Subsidies were paid to producers who complied with the program. A new diversion program commenced in 1987 and is due to last five years.

Every year the government determines what quantity of rice should be produced and allocates production quotas to each prefecture. These are then allocated to individual producers and are not transferable. It is not clear how the quotas for prefectures or farmers are determined, since prefectures where costs of production are low do not necessarily get a larger quota than prefectures with high production costs.

(c) Sugar

All cane sugar is produced on islands at the southern end of the Japanese archipelago, and sugar beet is produced almost entirely in Hokkaido in the north. About 25 per cent of the domestic demand for sugar is met from domestic cane and beet and the remainder is imported in raw form and refined locally. Support to sugar producers is very high, with subsidies to producers and taxes on imports which raise and stabilise the domestic price. Only small taxes are applied to high fructose corn syrup.

Growers are assured a minimum producer price - Y20 810/t cane in 1986-87 in Okinawa. Domestic support prices vary slightly between beet and cane. The Japan Silk and Sugar Price Stabilisation Corporation (the quasi-governmental body which administers the policy) runs a complicated program based on a

series of paper transactions. It purchases all domestically produced refined sugar and then resells it to the refineries at a lower price. Licenced raw sugar importers also sell their imports to the Corporation and then buy them back, usually at a higher price.

The proceeds from the levy on imported sugar are placed in a price stabilisation fund until required to pay refunds to importers when the average import price exceeds the maximum stabilisation price. The proceeds from the surcharge are paid into an adjustment fund which pays for subsidies to domestic producers.

Refiners use both imported and domestic raw sugar and are allowed a standard refining cost (Y56 000/t). The consumer price for refined sugar in 1985-86 (Y195 000/t) is high compared with the world price (about Y32 000/t).

The high prices for natural sweeteners encouraged the expansion of production of high fructose corn syrup. This industry expanded so much that it was brought under the Corporation's purchase-resale regime to ensure it maintained control over the sugar market. High cost domestically produced potato starch must be used with imported corn (imported duty free) in a required ratio in the production of high fructose corn syrup.

(d) Soybeans

The core of support for soybeans is a deficiency payment to producers. This compensates for the shortfall of the standard marketing price from the base price, which the government fixes every year on the basis of a parity index by the government. The standard marketing price is the estimate of the average producer's selling price net of marketing costs. Producers also benefit from subsidies provided under the Paddy Field Reorientation Program. Imports enter free of duty and there are no quantitative restrictions, these having been abolished in 1961.

(e) Beef

Import quotas have for long been the dominating feature of Japan's beef industry. Through control over imports, the Livestock Industry Promotion Corporation - the state trading body important in the beef industry, as well as other livestock industries - has operated a price stabilisation scheme which has kept Japanese beef prices at both consumer and producer levels well above border prices. The rents which have arisen as a result of the beef quotas have also been an important part of the Corporation's funding of the dairy industry. Developments in the beef industry are closely linked with the dairy industry, since dairy breeds now provide about 70 per cent of the beef industry's output.

The Corporation also manages a beef-calf price stabilisation scheme which provides deficiency payments to calf producers when market prices fall below target prices.

However, in mid-1988 Japan announced some important changes to its beef policies.

(f) Dairy

While there are no tariffs or import quotas on fluid milk, imports are excluded through health regulations. The government's Fair Trade Committee

set a price to farmers of Y118.2/L for fluid milk for drinking which has remained unchanged since 1978. In practice, this price, which relates to the Kanto area (there are other prices for other regions), has little meaning as the price received by farmers is determined by negotiations between farmer representatives and the representatives of major milk companies.

Although the price of fluid milk differs between prefectures, interprefectural flows are minimal because of 'understandings' between the cooperatives (who are responsible for milk marketing) in each prefecture. These 'understandings' have no legislative basis and are part of a supply management plan drawn up by the cooperatives and the Ministry of Agriculture, Forestry and Fisheries, which allocate production quotas to each prefecture.

The returns from fluid and manufacturing milk are pooled by a single milk collection agency in each prefecture, authorised by the government. This agency is almost always the prefectural dairy cooperative. Thus farmers within each prefecture receive an average price, which differs between prefectures depending on the proportions of fluid and manufacturing milk.

The price farmers receive for manufacturing milk, the guaranteed price, is administratively determined. The guaranteed price has two components. A standard transactions price which is paid by the manufacturer and a deficiency payment which is paid directly by the government. It is based upon costs of production and demand and supply conditions.

Manufacturers are supported through domestic wholesale prices for designated dairy products, which are set and maintained by the Livestock Industry Promotion Corporation. A weighted average of these prices is converted to the standard transaction price paid to farmers for manufacturing milk, after allowing for certain processing costs. The standard transaction price thus represents what manufacturers can 'afford' to pay farmers for the manufacturing milk.

The difference between the guaranteed price and the standard transaction price is the deficiency payment.

The Corporation runs a buffer stocks operation to maintain the prices of certain dairy products in a band around their stabilisation indicative prices. This control is possible because the Corporation has a monopoly over imports of these products.

Skim milk powder, condensed milk and butter face tariffs which range from 25 per cent to 35 per cent, although for certain uses (the school lunch program and stock feed) skim milk powder is exempt.

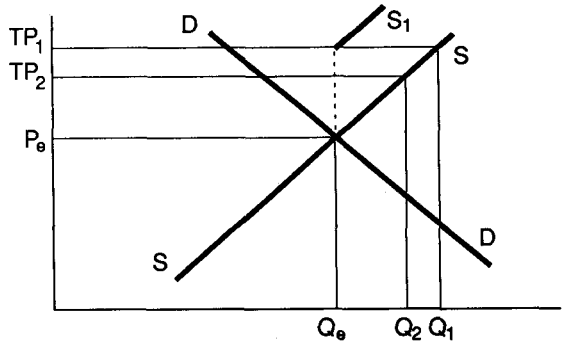
Appendix D

CO-ORDINATION OF CHANGES IN TARGET PRICES AND AREA REDUCTION PROGRAM

As described in chapter 3 and appendix C, US policy for major export crops is a complex and interrelated set of output stimulating and output restraining programs. Thus any adjustment in elements of these programs requires careful coordination.

Figure D1: US target prices and set-asides

ABARE chart



D = total demand facing US industry

S = US supply curve

S_1 = US effective supply curve with initial set-aside of Q_1-Q_e

TP_1 = initial US target price

P_e = no intervention equilibrium market price

Q_e = no intervention equilibrium quantity produced

For example, consider figure D1, which shows the linkages between US target price support and set-aside arrangements. If the initial policy settings are production-neutral, the area reduction program of Q_1-Q_e offsets the production stimulating effect of the target price TP_1. In this case, if the target price were reduced to TP_2, the area reduction program necessary to offset the production stimulating effect of a new lower target price would decline to Q_2-Q_e. Similarly, if the current area reduction program did not fully offset the production stimulating effect at TP_1 but was greater than Q_2-Q_e there would still be scope, albeit less than in the previous case, to relax the set-aside levels to Q_2-Q_e.

On the other hand, if the area reduction at TP_1 is less than Q_2-Q_e there is no scope to relax the set-aside arrangements when the target price is reduced to TP_2. In this case the target price needs to fall further or the set-asides need to be made more restrictive to remove the trade distorting effects of the initial policy settings.

REFERENCES

Anderson, K. and Tyers, R. (1986), 'Agricultural policies of industrial countries and their effects on traditional food exporters', Economic Record 62(179), 385-99.

___ (1987), Liberalising OECD Agricultural Policies in the Uruguay Round: Effects on Trade and Welfare. Working Papers in Trade and Development 87/10, Department of Economics and National Centre for Development Studies, Australian National University, Canberra.

Blandford, D. (1987), The costs of agricultural protection and the difference free trade would make. Paper presented at the Resources for the Future workshop 'Agricultural Protectionism in the Industrialised World, Washington DC, 17-18 December.

Cairns Group (1988), Ministerial Statement, Bariloche, Argentina, 26 February.

Commission of the European Communities (1985), Perspectives for the Common Agricultural Policy, Com (85) 333 final, Brussels.

Council of Economic Advisors (1987), Economic Report of the President, US Government Printing Office, Washington DC.

Council of the European Communities (1988a), Document 5461/88, Brussels.

___ (1988b), Document SN517/88, Brussels.

Dixit, P.M. and Roningen, V.O. (1986), Modeling Bilateral Trade Flows with the Static World Policy Simulation (SWOPSIM) Modeling Framework, Economic Research Service Staff Report AGES861124, US Department of Agriculture Washington DC.

ERS (Economic Research Service) (1985), Wheat: Background for 1985 Farm Legislation, Agricultural Information Bulletin 467, Washington DC.

___ (1987), Government Intervention in Agriculture Measurement, Evaluation and Implications for Trade Negotiations, FAER-229, US Department of Agriculture, Washington DC.

___ (1988), Estimates of Producer and Consumer Subsidy Equivalents: Government Intervention in Agriculture 1982, Economic Research Service Staff Report AGES 880127, US Department of Agriculture, Washington DC.

European Community (1988), Brussels Summit, Annex 1, February, Brussels.

GATT (General Agreement on Tariffs and Trade) (1986), Ministerial Declaration on the Uruguay Round, Punta del Este, Uruguay, 15-19 September.

George, P.S. and King, G.A. (1971), Consumer Demand for Food Commodities in the United States with Projections for 1980, Giannini Foundation Monograph 26, Berkeley.

Hall, N., Fraser, L. and Purtill, A. (1988), Supply response in broadacre agriculture. Australian Bureau of Agricultural and Resource Economics

paper presented at the 32nd Annual Conference of the Australian Agricultural Economics Society, La Trobe University, Melbourne, 8-12 February.

Haszler, H. and Parsons, D. (1987), 'The price adjustment gap and world agricultural policy reform', Quarterly Review of the Rural Economy 9(2), 177-88.

Higashi, C. and Lauter, G.P. (1987), The Internationalisation of the Japanese Economy, Kluwer Academic Publishers, Boston.

Higgs, P.J. (1986), Adaptation and Survival in Australian Agriculture, Oxford University Press, Melbourne.

Industries Assistance Commission (1987), Assistance to Agricultural and Manufacturing Industries, Australian Government Publishing Service, Canberra.

Japan International Agricultural Council (1987), 'ZEN-CHU to collect signatures in protest of market opening', Japan Agrinfo Newsletter 5(2), 5.

Krissoff, B. and Ballenger, N. (1987a), The Effect of Protection and Exchange Rate Policies on Agricultural Trade: Implications for Argentina, Brazil and Mexico. International Agricultural Trade Research Consortium Working Paper 87-4, Washington DC.

___ (1987b), Agricultural Trade Liberalisation in a Multi-sector World Model. International Agricultural Trade Research Consortium Working Paper 87-9, Washington DC.

Martin, W. and Shaw, I. (1986), The Effect of Exchange Rate Changes on the Value of Australia's Major Agricultural Exports, Discussion Paper 152, Centre for Economic Policy Research, Australian National University, Canberra.

Miller, G. (1987), The Political Economy of International Agricultural Policy Reform, Australian Government Publishing Service, Canberra.

Moore, T.G. (1987), 'Farm policy: justifications, failures and the need for reform', The Federal Reserve Bank of St Louis Review 69(8), 5-12.

Mori, H. (no date), Japanese agriculture - rice policies - background and issues as related to feedstuffs, Senshu University, Tokyo (unpublished).

OECD (1987a), Ministerial Council Meeting, Communique, May, Paris.

___ (1987b), National Policies and Agricultural Trade, Paris.

Roningen, V.O. (1986), A Static World Policy Simulation (SWOPSIM) Framework, Economic Research Service Staff Report AGES860625, US Department of Agriculture, Washington DC.

Runge, C. and Halbach, D. (1987), 'A sales tax on food can pay for farm programs', Choices, first quarter 1987, 6-9.

Shibayama, S. (1988), 'Farmers protest imports, but influence wanes', Japan Economic Journal 23 January, p.28.

Valdes, A. (1987), Agriculture in the Uruguay Round: developing country interests. Paper presented at the Conference on GATT and the Developing World, East-West Centre, Honolulu, 24-26 June.

Venice Economic Summit (1987), Venice Economic Declaration, June, Venice.

Webb, A.J. (1984, Protection in Agricultural Markets, Economic Research Service Staff Report AGES861216, US Department of Agriculture, Washington DC.

___, Roningen, V.O. and Dixit, P. (1987), Analyzing agricultural trade liberalisation for the Pacific Basin. Economic Research Service paper presented at the Livestock and Feedgrains Working Group of the Pacific Economic Cooperation Conference, Napier, New Zealand, October 20-22.

World Bank (1986), World Development Report 1986, Washington DC.

9 780644 082877

R88/20976 Cat. No. 88 1077 8