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Agriculture in the Uruguay Round

Analyses of Government Support

AGRICULTURE IN THE URUGUAY ROUND: ANALYSES OF GOVERNMENT SUPPORT. Agriculture and Trade Analysis Division, Economic Research Service, U.S. Department of Agriculture. Staff Report AGES880802.

ABSTRACT

Current negotiations under the General Agreement on Tariffs and Trade are considering proposals to eliminate government programs affecting agriculture in the member countries. Key to the negotiations are measures to assess the economic effect of such programs on trade. The producer and consumer subsidy equivalents (PSEs and CSEs) are such measures. Subsidy equivalents, by summarizing the effects of a wide variety of government policies into one parameter, allow comparisons to be made of government support across countries, commodity markets, and types of policies. This report presents several analyses of government intervention in agriculture as measured by PSEs and CSEs.

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Washington, DC 20005-4788

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PREFACE

This report is one of a series of publications resulting from the Economic Research Service's studies of agricultural and trade policies. An earlier study, Government Intervention in Agriculture, reported range estimates of average producer and consumer subsidy equivalents (PSEs and CSEs) for 1982-84, and provided analysis of the policies underlying these calculations. A more recent publication, Estimates of Producer and Consumer Subsidy Equivalents, updated and expanded the coverage of the earlier report. In addition to extending the number of countries covered from 13 to 17, yearly estimates of PSEs and CSEs were provided for the period 1982-86, disaggregated by policy category. This report goes one step further, providing additional information on the policy regimes in place in these countries as well as policy information on countries and regions for which PSEs were not calculated. It features analyses of PSEs by type of policy utilized and across countries and commodities. In addition, it examines trends and other relationships using a PSE database which has grown to be of significant value to those interested in government intervention in agriculture. This report draws on the estimates and analyses of the previous studies as well as policy inventories in the Global Review of Agricultural Policies.

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ABBREVIATIONS

AMS	Aggregate measure of support
CAP	Common Agricultural Policy (EC)
CCC	Commodity Credit Corporation (U.S.)
CMEA	Council of Mutual Economic Assistance
CPE	Centrally planned economy
CRP	Conservation reserve program (U.S.)
CSE	Consumer subsidy equivalent
DC	Developed country
EC	European Community
ECU	European currency unit (EC)
EEP	Export enhancement program (U.S.)
ERA	Effective rate of assistance
ERS	Economic Research Service (USDA)
FOR	Farmer-owned reserve
FSA	Food Security Act of 1985 (U.S.)
FTO	Foreign trade organization (CPEs)
GATT	General Agreement on Tariffs and Trade
IME	Industrial market economy
IMF	International Monetary Fund
LDC	Less-developed country
MFN	Most favored nation
MTN	Multilateral trade negotiations
NIC	Newly industrialized country
NRP	Nominal rate of protection
NTB	Nontariff barrier
OECD	Organization for Economic Cooperation and Development
PIK	Payment-in-kind Program (U.S.)
PSE	Producer subsidy equivalent
SCGP	Special Canadian Grains Program
TDE	Trade distortion equivalent
USDA	U.S. Department of Agriculture
VAT	Value-added tax

CONTENTS

Note: In this report, dollars refer to U.S. dollars.

SUMMARY

Current negotiations under the General Agreement on Tariffs and Trade (GATT) are considering proposals to eliminate government programs affecting agriculture in the member countries. Key to the negotiations are methods to assess the economic effects of such programs. The producer subsidy equivalent (PSE) is such a measure. This report presents several analyses of government intervention in agriculture, as measured by PSEs and CSEs (consumer subsidy equivalents).

Subsidy equivalents, by summarizing the effects of a wide variety of government policies into one parameter, allow comparisons to be made of government support across countries, commodity markets, and types of policies. The calculation and publication of PSEs help make the full extent of subsidies to agriculture more transparent to commodity groups, policymakers, taxpayers, and consumers. The subsidy equivalent can also be a key input into world agricultural models, through which gains from liberalizing trade can be measured. Furthermore, subsidy equivalents may provide GATT negotiators suitable targets which can be negotiated downward, much like tariff rates on manufactured items provided in previous GATT rounds.

The subsidy equivalent analyses reported here reveal significant government intervention in the agricultural sectors of almost all countries, whether large or small, rich or poor, importing or exporting. A wide range of commodities receive this support. Moreover, there is a great variety of mechanisms used to subsidize farmers, or in some cases to implicitly tax them. A comparison of policy instruments shows heavy reliance on policies that support prices and income and that subsidize the use of inputs. If the GATT negotiations focus on the reduction of trade distortions, these policies will have to receive considerable attention.

A comparison of country PSEs shows wide variations in intervention. Among the studied countries, Japan and South Korea provided the highest levels of support for producers as a proportion of producer revenue in the studied commodities. The United States, EC, Canada, New Zealand, Mexico, and South Africa have had comparable, more moderate levels of support over the period, while Australia and Brazil had significantly lower levels. In the poorest of the less-developed countries (LDCs), support tended to be negative; that is, agricultural producers were implicitly taxed. Nearly all countries showed a tendency to increase their support in the 1980s, although that meant reduced government intervention for LDCs that had been net taxers. CSEs tended to be opposite in sign to PSEs and to have smaller absolute values.

A comparison of support among commodities revealed a global pattern of relatively high PSEs for sugar and dairy, less for grains, and least for meats and oilseeds. Exported commodities tended to be supported less than commodities imported to supplement domestic production, reflecting a common import-substitution strategy. For several commodities in developed countries, direct payments provided most of the transfers.

Total policy transfers to U.S. agricultural producers of 12 commodities, as measured by PSEs, averaged $27 billion per year during 1982-86, an amount equal to 25 percent of the gross value of production plus direct payments. PSEs increased from 17 percent in 1982 to 36 percent by 1986 as direct payments to grain producers increased sharply. The aggregate PSE for the EC rose from 29 percent in 1982 to 50 percent in 1986. Large increases in

measured support continued in 1986 despite efforts to implement stabilizers and freeze some support prices.

Support in Pacific Rim economies often reflected the trading status of the country. The major agricultural exporters, Australia, New Zealand, and Canada, favor trade liberalization and market access. Australia gave low support to agricultural commodities, while New Zealand's and Canada's levels were moderate. The major food and feed importers, Japan, South Korea, and Taiwan, are concerned with food security and stability of supplies. Aggregate producer support in Japan and Korea and support to producers of imported grains and oilseeds in Taiwan was the highest in the region, averaging over 50 percent. Countries in South and Southeast Asia often maintained producer prices below the world level, particularly for food staples like rice in India and wheat in Pakistan, and export crops like rice in Pakistan and Thailand, poultry in Thailand, and sugar in the Philippines. Nonstaples that comprise small shares of the diet (meats and dairy products) and crops that are being promoted through price incentives (corn in Indonesia) tended to receive higher levels of support. Producer taxation was more common in South Asia, where agriculture is a larger part of the economy, while subsidization was more common in Southeast Asia.

Farmers generally gained from the combined effects of policies in Brazil and Mexico during 1982-86. In Mexico, the PSEs for corn, soybeans, and sorghum trended slightly upward, while subsidies for cotton (1982-83) switched to a tax in 1984-86. In Brazil, trends for wheat, corn, and soybeans were mixed, while for rice, there was a strong upward trend in support, and for poultry and beef, a declining trend. In Argentina, the overall transfers were negative, but this was not the case for all commodities. Sorghum and soybeans saw increasing taxes, while support varied for wheat and corn.

In Sub-Saharan Africa, a widespread pattern of producer taxation is suggested by estimates of nominal rates of protection and ERS estimates of PSEs for 1982-86. The net effect of policies affecting agriculture in Nigeria was to tax producers more than 40 percent of the farmgate value of wheat, corn, rice, sugar, cotton, and cocoa. In North Africa and the Middle East, consumer and producer subsidies are critical policy and structural production determinants. In countries unable to achieve food self-sufficiency, producer subsidies are often used both to encourage output and to redistribute income. Consumers in these regions are subsidized through government intervention, with wide variations by country and commodity.

In the centrally planned economies, subsidies stem from dual pricing systems which pay farmers higher prices for basic staple foods than are charged consumers. They also result from farmers paying less for inputs than the producers of the inputs receive. Subsidies reflect state interest in promoting agricultural production and stable prices for consumers. As in many market economies, growing budget subsidies create pressure for improved efficiency in agricultural production and trade. A recent tendency to increase the role of the market may increase the responsiveness of these countries' imports to world prices. This may also change domestic supply and demand, which would affect world prices.

The GATT round has before it proposals that would reduce or eliminate most government programs related to agriculture in GATT member countries. The U.S. proposal, for example, calls for complete removal in 10 years of all agricultural programs that stimulate production. The Cairns Group, a

coalition of 13 agricultural exporters including both developed and developing nations, has tabled a compatible proposal. Canada has made a proposal that is similar to that of the Cairns Group (of which Canada is a member) that emphasizes the removal of a more narrowly defined set of policies that lead to trade distortions. The Nordic countries have proposed that export subsidies and production incentives be subject to greater discipline, although they place less emphasis on import restrictions. The EC proposal accepts the need to reduce supply/demand imbalances, but does not regard complete liberalization as the necessary outcome. The Japanese proposal differs from most others because it regards the problems underlying agricultural trade reform as concerns limited to agricultural exporters.

All but the Japanese proposal endorse an aggregate measure of support to evaluate government support and monitor liberalization. An aggregate measure collects the effects of a variety of government programs. The United States and the Cairns Group specifically mention the PSE. The EC recognizes the PSE as useful but states that it fails to completely account for production control programs. The Canadian and Nordic proposals seek an aggregate measure of policy effects on trade, rather than on producer revenue, but no such measure has yet been operationally defined or applied to a range of countries.

Agriculture in the Uruguay Round

Analyses of Government Support

INTRODUCTION

The United States and other parties to the General Agreement on Tariffs and Trade (GATT) are participating in an eighth round of multilateral trade negotiations (MTN). The GATT is an organization of 95 member nations which together account for over four-fifths of world trade. The goal of the GATT as set forth in the preamble to the 1948 General Agreement is "the substantial reduction of tariffs and other barriers to trade." Since GATT's inception 40 years ago, member nations have negotiated seven rounds of tariff reductions resulting in significant decreases in trade barriers accompanied by large increases in global trade.

Previous MTN rounds focused on trade in industrial products and produced significant reductions in tariffs on manufactured goods. However, contracting parties to the GATT have generally been reluctant to subject their agricultural policies to international scrutiny and discipline. GATT rules regulating agricultural trade are far more lenient than those regulating nonagricultural trade. GATT's Article XI generally prohibits use of quantitative restrictions, but there are several exceptions to the general prohibition where such restrictions are applied to agricultural imports and exports. Formal waivers to Article XI have also been granted. For example, the 1955 waiver for the United States permits it to apply quantitative restrictions on agricultural products when imports are found to interfere with the operations of government commodity programs. GATT rules also do not prohibit export subsidies on processed products so long as the country that subsidizes does not acquire "more than an equitable share of world trade." Moreover, the GATT does not provide any guidelines for several common forms of agricultural trade barriers such as unbound tariffs, variable levies, minimum import prices, and voluntary export restraint agreements.

The trade barriers and many of the domestic agricultural policies that have been used to provide income support to farmers, primarily in developed countries, have also insulated producers from world market signals, leading to surpluses. In contrast to the 1970s, when agricultural trade expanded, the 1980s saw stagnation. The decade opened with a major recession (1980-82). When growth resumed after the recession, it was slower than in previous decades. The recession cut inflation from high to moderate levels; many commodity prices declined significantly in 1981 and 1982 and then again in 1985. A sharp drop in oil prices, especially in 1983, helped some countries' balance of payments, but exporters were hit hard. Many governments spent heavily to try to spur growth, incurring record deficits in 1982 and 1983. Many LDCs now have either debt or deficit trouble, and import demand, including demand for agricultural products, has revived slowly.

Recent growing use of export subsidies to dispose of surpluses and rising farm program costs have resulted in friction among major exporters and heavy burdens on government budgets. Because of these problems, developed countries are more willing to participate in a MTN which includes agriculture. Many developing countries are also interested in the Uruguay Round. Some are likely to be seriously affected by changes in the world trade regime agreed to therein, while others see an opportunity to lobby for beneficial changes like improved access to developed country markets.

The United States and many other countries have come to recognize the inadequacies of existing GATT rules for agriculture. As a result, agriculture has been given a prominent place in the current round of negotiations. The ministerial declaration which launched the Uruguay Round gave explicit recognition, for the first time in GATT's history, to the serious state of world agriculture and to the need to address domestic as well as trade policies. It called for "increasing discipline on the use of all direct and indirect subsidies and other measures affecting directly or indirectly agricultural trade." There was also the clear aim to "achieve greater liberalization of trade in agriculture" by bringing "all measures affecting import access and export competition under strengthened and more operationally effective GATT rules and disciplines."

This round has before it a number of proposals that would dismantle current government agricultural support regimes in GATT member nations. The U.S. proposal calls for the complete removal of all production-stimulating agricultural policies over a 10-year period. The U.S. proposal also calls for the use of an aggregate measure of support like the producer subsidy equivalent (PSE) to facilitate negotiations and serve as a tool for monitoring the process of liberalization. Two coalitions, the Cairns Group (made up of 13 agricultural exporting nations including Canada, Australia, Brazil, and Argentina) and the Nordic countries (Sweden, Norway, Finland, and Iceland), have introduced similar proposals which stress the need for greater reliance on the market and less dependence on government policies. In addition, the Canadians have introduced a separate proposal which, while basically supporting the Cairns Group objectives, calls for the use of an alternative measure to the PSE, called the trade distortion equivalent (TDE). The European Community (EC) proposal, while acknowledging the need to follow certain market signals, does not regard complete dismantling of current government programs as the necessary institutional outcome. Instead, it calls for a long-term balancing of support across commodities and countries through "harmonization." The Japanese proposal differs strongly from the rest by regarding the problems of excess supply and burdensome government budgets as concerns limited to agricultural exporters. It does not recognize the need for using any type of aggregate measure of protection in the negotiating process.

To reach any agreement, some common understanding will be needed on the extent of government intervention in agriculture, the effects individual government policies have on world markets, and the implications for producers, consumers, and taxpayers of reducing or eliminating assistance. All of the proposals listed above, with the exception of the Japanese proposal, endorse an aggregate measure of support to evaluate the effects of reducing government support to farmers. This measure would sum up, into one parameter, the level of assistance provided via a wide variety of government policies. Several examples of such measures have been proposed. The Cairns Group and EC proposals both advocate the use of a PSE-type measure, although the EC proposes that it be adjusted for production control programs and for

fluctuations in the world price and exchange rate. The Nordic Group favors use of the Canadian TDE, adjusted for fluctuations in the world price and exchange rates. The Australians have advanced a measure of their own, the price adjustment gap. A variety of aggregate measures of support are reviewed and compared in the methodology section of this report.

Both the Organization for Economic Cooperation and Development (OECD) and the Economic Research Service (ERS) of the U.S. Department of Agriculture have developed and calculated aggregate measures of support to agriculture using the PSE/CSE methodology. PSEs and CSEs are calculated by assessing the effects of individual policies on the producers and consumers of particular commodities. They are designed to measure the overall amount and degree of support to agriculture, so they could be used to monitor any agreed-upon reductions in support. The country-commodity combinations for which PSEs were calculated in ERS were determined by their importance or potential importance in trade.

Many of the details of the calculation of PSEs cited in this report have been given in the ERS publication (50), 1/ so they will not be repeated here. Similarly, many specific country policies have been reported in the ERS publication (51), so only regional summaries are provided here.

GLOBAL ANALYSES

The three papers in this section describe the overall structure and levels of intervention as embodied in the PSEs. Each paper examines intervention by organizing the wealth of PSE data in a particular way. The first focuses on policies, revealing the likely effects on trade inherent in different types of policies that have been implemented in various countries for different commodities. The second paper centers on variations in PSEs by commodity and their relationships to trade. The last studies differences in PSEs across countries, providing theoretical and empirical explanations for differences in policies at different stages of development and between importing and exporting countries. The papers include assessments of issues likely to be important in the MTN.

Government Support by Policy and Effects on Trade

Nancy E. Schwartz, Stephen Magiera, and Mary C. Mervenne

A fundamental problem for agricultural trade negotiations is the wide variety of trade and domestic policies that governments use to intervene in their agricultural markets. Tariffs, the traditional GATT negotiating subjects, are relatively unimportant to agricultural trade. Rather, governments have developed a wide variety of nontariff protective barriers in the form of border measures and domestic policies. Domestic policies, however, typically fall outside current GATT disciplines. In fact, several GATT rules have been written to accommodate domestic policies. Furthermore, and unlike the case of industrial products where tariffs represent clear-cut targets for negotiators, no such targets exist for agricultural commodities.

1/ Underlined numbers in parentheses refer to items in the References section.

The producer subsidy equivalent (PSE) as defined by ERS and OECD is a measure of income transfers to producers (49). It includes all types of government programs for agriculture for which data are available. It helps one identify the major policy instruments used to support agriculture in various countries and compare support across countries with different types of policies. These sources of support were classified into the categories of policies outlined below. Sources of support varied significantly from country to country, illustrating one of the problems faced by negotiators in the Uruguay Round.

Categorizing Policies and Their Effects on Trade

Certain proposals suggest that it is not necessarily income support (which the PSE measures), but rather the trade distortions caused by policies that should be of most concern in the ongoing trade negotiations. Agricultural policies can distort world markets in the short run by changing quantities traded, thereby influencing the world prices that exporters and importers face. Policies that encourage domestic production or discourage domestic consumption increase exportable surpluses of exporting countries and reduce import demand by importing countries. This places downward pressure on world prices. Thus, while the primary objective of many farm policies is to transfer income to farmers (the PSE estimates these transfers), the GATT is concerned with the effects these policies have on world markets.

While the most important characteristic of a policy from a GATT perspective is the degree to which it can potentially distort trade, it is difficult to rank policies, a priori, by their trade effects. The degree to which a particular policy distorts trade depends on: (1) how extensive the program is, as measured, for example, by government and consumer costs, (2) how large a country's supply and demand elasticities are, and (3) how the policy is administered and operates in combination with other policies. Obvious examples of the latter are U.S. grain programs: deficiency payments provide additional production incentives to producers, while production is cut back by acreage reduction requirements.

In order to compare support across countries, we categorize policies by certain characteristics that broadly identify how policies affect prices and production decisions and, therefore, trade. For example, one can identify a variety of policies that affect trade by altering a country's internal market price. Other policies alter producer incentives and, therefore, output and trade by directly subsidizing farm income or farm output, without directly affecting the market price consumers face. Another set of policies affects producer incentives and, therefore, output and trade, by affecting the input prices farmers pay. In addition, there is a wide range of policies that affect the marketing of products, but which may have vastly different effects on trade. Still other policies tend to affect longrun production decisions (and therefore future trade); these include long-term research and infrastructure expenditures.

Most agricultural policies fall into one of five categories: price support measures including price stabilization schemes, direct income support measures that are tied to production or price, input subsidies, marketing subsidies, and long-term programs for research and infrastructure. Table 1 lists the policies used by OECD and ERS in the construction of PSEs under these categories. The table also provides some information on direct sources of trade effects by indicating whether a given policy directly affects producers, consumers, or both. Omitted from this list are consumer subsidies and taxes.

Table 1--Primary effects of commodity-specific policies on production, consumption, and trade

Policy	Effects on -- Production	Consumption	Trade
Border measures and market price support:			
Pricing policies (tariffs, import and export subsidies, variable levies, state marketing agencies, export credit guarantees, marketing loans, tiered pricing systems, certain tiered exchange rate systems, food aid and concessional sales, other import and export incentives)	x	x	x
Quantitative barriers (import and export quotas, voluntary export quotas, licensing restrictions)	x	x	x
Qualitative restrictions (quality standards, labeling standards, safety and sanitary regulations)	x	x	x
Price stabilization scheme payins/payouts (schemes that require government support on average or border measures)	x	x	x
Direct income support to producers tied to production (direct payments and deficiency payments, crop insurance and disaster payments, income tax concessions)	x		x
Input subsidies or taxes:			
On purchased inputs (fuel, fertilizer, seed, chemicals/disease control, irrigation, feed subsidies on meat production)	x		x
On factors of production (land, labor, and capital) (concessionary interest rates, credit guarantees, concessionary taxes on agricultural land, storage cost subsidies, labor subsidies)	x		x
Domestic marketing subsidies:			
Transportation subsidies	x		x
Marketing credit	x		x
Promotional programs		x	x
Inspection services	x	x	x
Long-term structural measures (research, advisory services/extension, rural development programs)	x		x

These policies affect consumption and, therefore, trade, but generally do not directly affect production incentives.

Price support policies (border measures and price stabilization schemes that are used to support prices above world market levels) affect both consumers and producers, raising the prices producers receive and consumers pay. This, in turn, affects trade and depresses world market prices by raising an exporter's excess supply (exports) and lowering an importer's excess demand (imports). In addition, border measures permit other domestic policies which would otherwise be untenable to transfer income to producers. For example, high internal prices for EC producers could not be sustained without the variable levy and export restitutions.

Policies that affect market prices include tariffs, state marketing control, price stabilization, and minimum price supports. Other trade policies such as variable import levies, export subsidies, and quantitative restrictions are also included in this category. (See table 1 for additional policies.) Some price stabilization schemes do not require government revenues on average or do not attempt to maintain internal prices above world prices, on average. In these cases, the average support measured over a period of several years should be zero. To the extent that the average is greater than zero, farmers' average incomes are higher than they would be in the absence of support.

Direct payments to producers that are tied to production affect trade by raising producer net returns and stimulating production, which lowers import demand or raises exportable surpluses. Input subsidies have the same effect. Certain marketing subsidies, such as transportation subsidies, have similar effects although their effects on farmer net returns is less clear. While price support policies are effective only if border measures are in place, direct payments and input subsidies can support farm income without border measures. Although these policies affect producers, they do not directly affect consumers, since they do not prevent consumers from paying the world price for a given commodity.

Direct income support measures include direct payments such as deficiency payments and other (nonprice) income guarantees, crop insurance subsidies, and noninput tax concessions. Disaster payments are also included in this category.

Input subsidies include fertilizer, pesticide, fuel, water, and labor subsidies; tax concessions; and interest and other credit concessions. Cost savings related to government subsidization of health services are also covered. Under certain conditions, input subsidy expenditures may distort production more than equivalent output subsidy expenditures (see (20), for example).

Marketing subsidies include processing, transportation, inspection, and sales promotion subsidies by governments, and marketing credits. In most cases, these subsidies are calculated from government budget outlays allocated across affected commodities. Certain marketing subsidies, like those on transportation, may enhance producer returns and stimulate production. The effects of other marketing subsidies on production are less clear. Marketing credits, for example, may raise wholesalers' incomes rather than to producers'.

Long-term policies include government outlays allocated across commodities for both research and extension as well as structural development projects.

Longer term structural measures tend to cause fewer trade-distorting effects in the short run than do price supports, direct income supports, and input and marketing subsidies. In the longer run, these forms of sectoral investment can significantly expand production and permanently lower unit production costs. They may increase world welfare by lowering prices to consumers.

In certain cases, expenditures that appear to be related to long-term structural development actually subsidize current production costs. In India, for example, rural development program costs include subsidized electricity costs. In these cases, the policy was counted as an input subsidy, not as a long-term structural program.

Sources of Support by Country

The categories outlined above suggest that price policies, direct income policies, input subsidies, and certain marketing subsidies are most likely to affect trade in the short run. PSEs for individual policies in various countries are aggregated in table 2 to assess the extent to which the policies fall into the categories outlined above. Fourteen countries and one region are analyzed. The developed countries and regions (DCs) are the United States, the European Community, Japan, Canada, Australia, and New Zealand. Less-developed countries (LDCs) and newly industrialized countries (NICs) include Argentina, Mexico, Nigeria, South Korea, Brazil, India, Indonesia, Taiwan, and South Africa. Seven commodities are covered: barley, beef and veal, corn, dairy, rice, sugar, and wheat. The PSE calculations are not available for all commodities for several countries (table 3).

Some countries are either explicitly or implicitly net taxers of their agricultural sectors. Export taxes are often used by LDCs as a relatively low-cost means to collect government revenues. In addition, developing countries often have overvalued currencies which effectively tax their exports and subsidize their imports (including imported agricultural inputs such as machinery, fertilizer, and fuel). Even countries that are net subsidizers of agriculture often tax agriculture to recoup some of the cost of subsidization. For example, high dairy price supports are offset to some degree by producer levies in several developed countries.

Producer levies are calculated separately from the above categories, so that subsidies are kept strictly separate from disincentives. The key taxes include output levies assessed on producers and the implicit taxes due to currency overvaluation.

All other policies are included in a miscellaneous category called "other policies." This includes policies that do not fit into the above categories as well as policy expenditures whose end use is difficult to specify. For example, state expenditures often include a mix of the above policies, expenditures for which are not easily disaggregated. Finally, several countries have policies for which adequate information and data are unavailable. The breakdown of policies discussed here is based solely on policies for which data are available. Excluded policies are ignored, even though they may represent potentially important incentives to producers or disincentives to consumers. For example, the ERS calculations of PSEs for LDCs do not attempt to include estimates of the effective subsidization of inputs due to currency overvaluation. (For additional information, see (2).)

Table 2--Support to producers by policy, 1982-86 average

Policy	Argentina	Australia	Brazil	Canada	EC	India	Indonesia	Japan
				Million U.S. dollars				
Price support	--	296	1,313	1,437	37,669	--	452	16,721
Tariffs	--	--	--	49	--	--	--	511
Income support	--	92	--	836	621	--	--	601
Disaster payments	--	39	--	--	--	--	--	--
Input subsidies	--	45	1,255	302	--	912	594	35
Marketing	--	29	196	646	200	--	--	507
Long term	--	56	9	185	319	--	--	2,397
Other	378	--	34	--	--	--	--	--
Producer levies	(623)	--	(1,470)	(230)	(1,902)	(5,211)	--	--
Producer taxes	(623)	--	(1,081)	(230)	(1,902)	(5,211)	(86)	--
Other	--	--	(389)	--	--	--	--	--
Total, excl. levies	378	519	2,806	3,406	38,809	912	1,046	20,261

	Mexico	New Zealand	Nigeria	South Africa	South Korea	Taiwan	United States
				Million U.S. dollars			
Price support	454	9	86	433	4,254	403	10,970
Tariffs	--	--	81	--	--	--	477
Income support	--	15	--	--	2	--	7,795
Disaster payments	--	--	--	--	--		5
Input subsidies	467	37	61	126	23	--	2,192
Marketing	--	10	--	--	6	--	444
Long term	--	10	--	--	302	32	1,002
Other	241	--	--	82	--	--	1,786
Producer levies	(91)	(2)	(503)	(232)	--	--	(426)
Producer taxes	(91)	(2)	--	(50)	--	--	(426)
Other	--	--	(503)	(182)	--	--	--
Total, excl. levies	1,162	81	147	640	4,588	435	24,188

Parentheses denote a negative number, which indicates a tax.
-- = Not applicable.
Source: Calculated from data found in (38).

Table 3--Commodity coverage by country for support data

Argentina	Australia	Brazil	Canada	EC
Corn Wheat	Barley Beef and veal Dairy (milk) Rice Sugar Wheat	Beef Corn Rice Wheat	Barley Beef and veal Corn Dairy 1/ Sugar (beets) Wheat	Barley Beef and veal Corn Dairy (milk) Rice Sugar Wheat
India	**Indonesia**	**Japan**	**Mexico**	**New Zealand**
Rice Wheat	Rice	Barley Beef Dairy (milk) Rice Sugar (beet/cane) Wheat	Corn Wheat	Beef and veal Dairy
Nigeria	**South Africa**	**South Korea**	**Taiwan**	**United States**
Corn Rice Sugar Wheat	Corn Sugar Wheat	Barley Beef Corn Dairy (milk) Rice Wheat	Beef Corn Dairy (milk) Rice Sugar Wheat	Barley Beef and veal Corn Dairy 2/ Rice Sugar Wheat

1/ Manufactured and fluid milk. 2/ Whole milk.

Table 2 provides estimates of the income transferred to producers by policies in the following categories: price support, direct income, input subsidies, marketing subsidies, long-term structural policies, and miscellaneous "other" policies. The estimates are averaged across all seven commodities for 1982-86, valued in U.S. dollars. The shares of total positive support by policy category, averaged across all seven commodities for 1982-86, are summarized in figures 1 and 2. Figure 3 indicates the ratio of taxation to total positive support for each country.

The most salient result is that, excluding Argentina, Canada, and New Zealand, price, direct income, and input subsidies accounted for over 80 percent of total measured support to producers. In most countries, including the EC, Nigeria, South Korea, Brazil, India, Indonesia, and Taiwan, these policies accounted for over 90 percent of support.

Figure 1

Share of total positive support by policy for DCs (1982-86 average)

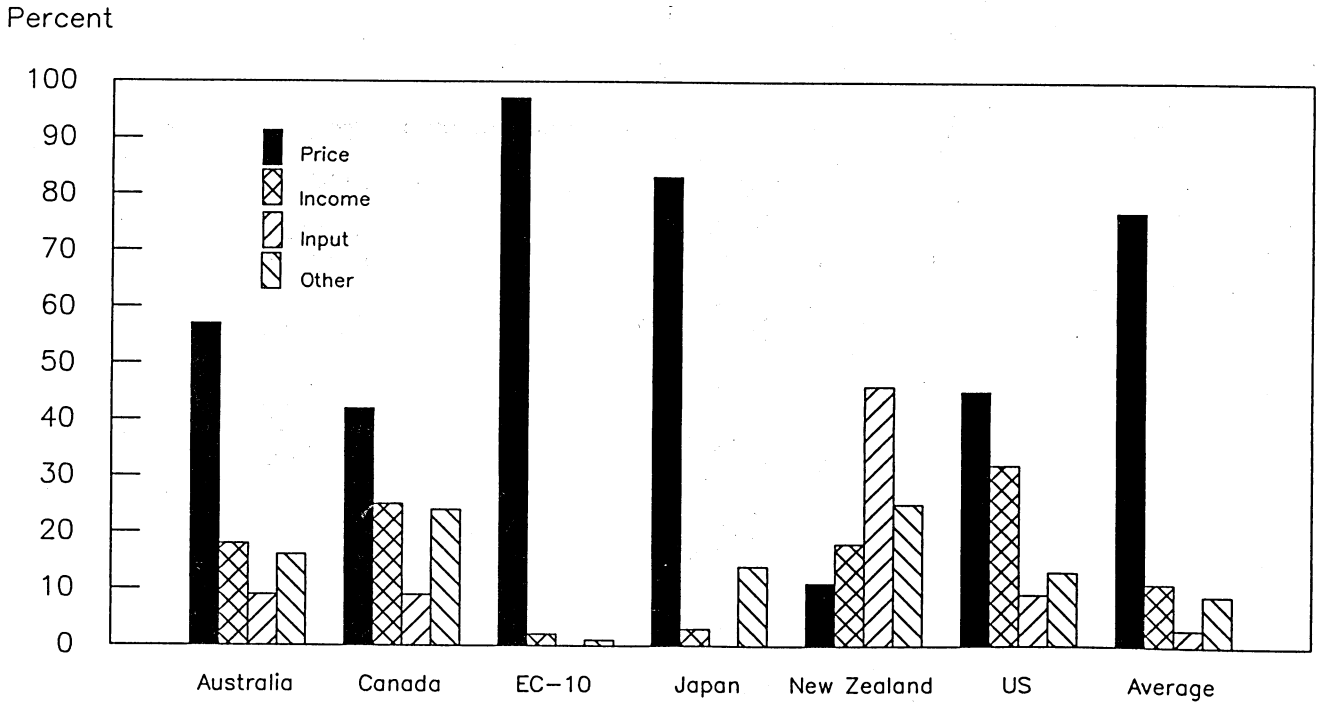


Figure 2

Share of total positive support by policy for LDCs and NICs (1982-86 average)

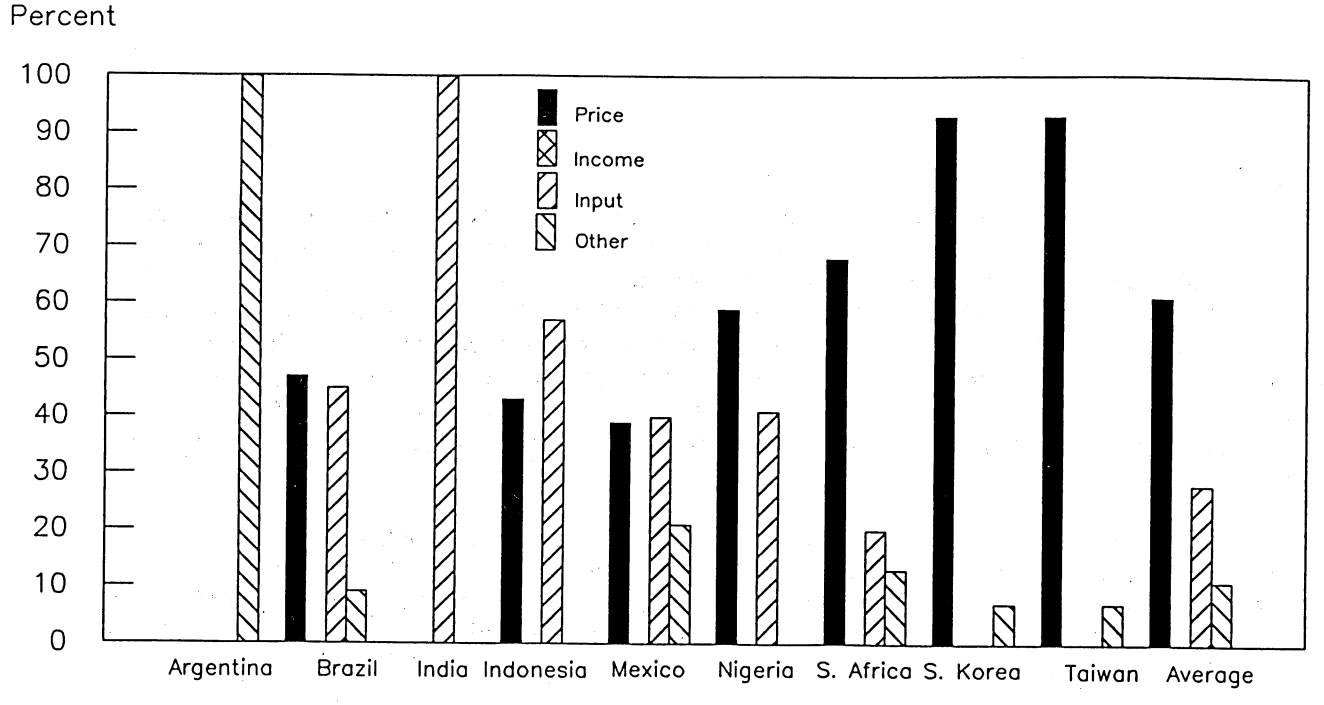
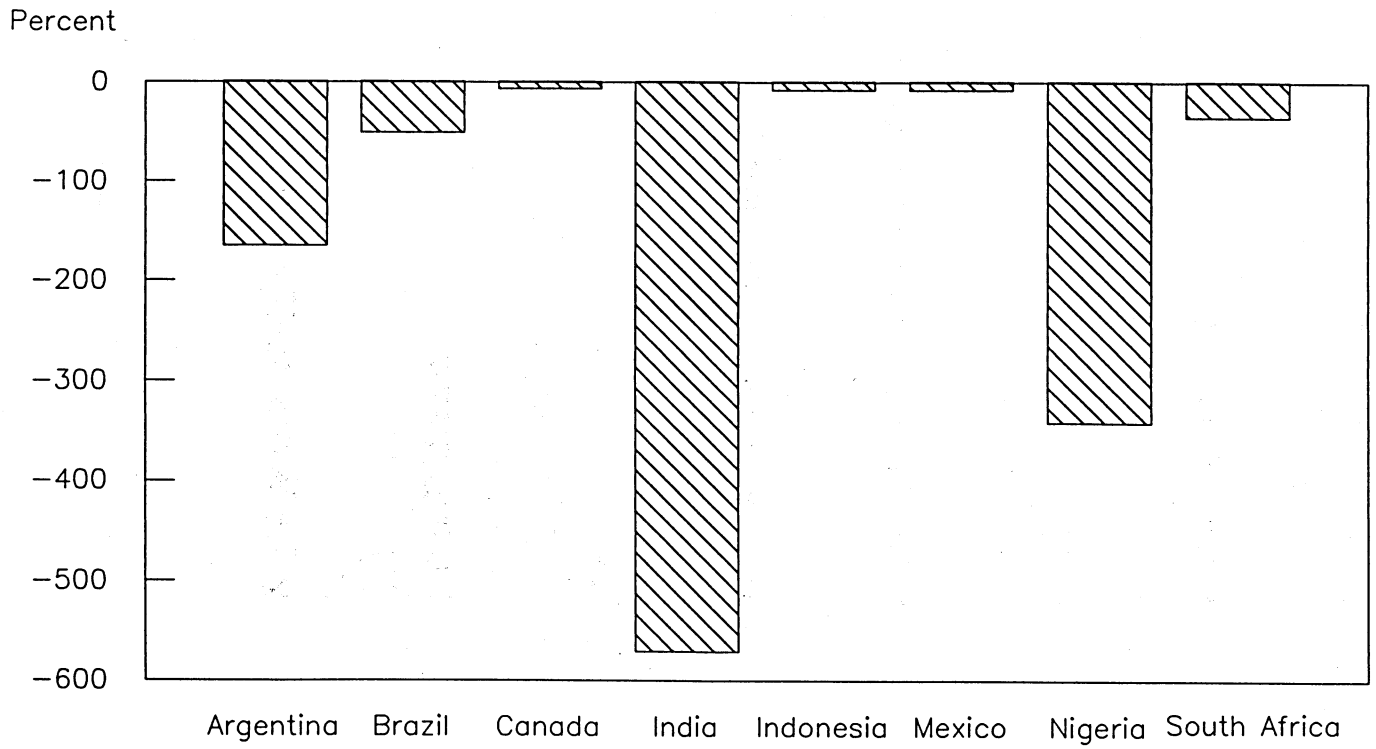


Figure 3

Ratio of taxation to positive support (1982–86 average)



Australia, EC, Japan, New Zealand, South Korea, Taiwan, and the United States, 5% or less.

Price supports--policies which distort both producer and consumer incentives--were the most pervasive policies. In the EC, South Korea, and Taiwan, price support policies accounted for over 90 percent of total support, followed by Japan with over 80 percent. In the United States, Canada, Australia, Mexico, Brazil, Indonesia, Nigeria, and South Africa, price support policies made up 40-70 percent of average support. Direct tariffs were, on average, a very small proportion of price support, averaging less than 3 percent for most countries. One exception was Nigeria, with over 55 percent of price support from tariffs.

Input subsidies were the next most prevalent category of policies. In India, all measured subsidies were for inputs; in Indonesia, over half; over a third in Brazil, Mexico, New Zealand, and Nigeria; and nearly a fifth in South Africa. Input subsidies accounted for close to a tenth of average support in the United States, Canada, and Australia.

In only the United States, Canada, Australia, and New Zealand did income support count for more than 18 percent of average support. Over a third of the direct income support in Australia was for disaster payments.

Marketing assistance, including transportation subsidies, accounted for an average of 19 and 12 percent of support in Canada and New Zealand. Marketing subsidies provided an important alternative to other forms of support, particularly in the case of Canada. Marketing credits were the principal form of subsidy in Brazil, where marketing subsidies made up close to 7 percent of support.

LDCs typically tax agriculture more heavily than do developed countries, even though most of the LDCs in this analysis are net subsidizers on average. Of the countries included in this analysis, only Argentina, Nigeria, and India were net taxers of agriculture on average. About half of subsidies in Brazil and South Africa were effectively taxed away on average. In the EC, Canada, Mexico, and Indonesia, only about 5 to 8 percent of transfers were taxed away. Less than 2 percent of average transfers were taxed away in Australia, Japan, New Zealand, South Korea, Taiwan, and the United States.

These averages give a broad overview of the use of various policies by major traders. Since the category of miscellaneous "other" policies includes provincial and other programs that may fall into more than one category, these averages represent a conservative estimate of the degree of support in each of the policy categories. What holds true for the average may not necessarily hold for individual commodities; within countries, policies are not necessarily uniform across commodities. Nevertheless, there are relatively few "outliers."

Conclusions

Analyzing the policies subsumed in PSEs reveals important information about the nature of policies in major trading countries. First, direct tariffs appear to be a minor form of agricultural support. This suggests that GATT negotiators will have to come to some agreement on domestic policies and other forms of government support in order to make significant reductions in agricultural support.

Second, analysis of the average 1982-86 support for key commodities by major trading countries reveals that, in general, over 80 percent of total average support is concentrated in these three categories: price support policies, direct income support (including certain price stabilization policies), and input subsidies (including certain marketing subsidies). This suggests that if significant progress on reducing trade distortions in world markets is to be gained, negotiations will need to address, at a minimum, this subset of policies.

Third, price supports accounted for the highest percentage of average support, followed by input subsidies. Direct income support was generally a small proportion of average support, typically less than 3 percent, except for the United States, Canada, Australia, and New Zealand. Therefore, under current regimes, most transfers to farmers are made by distorting market prices for outputs and inputs. In Canada, in particular, various marketing subsidies were an important form of support to producers. Therefore, in addition to price support, direct income, and input subsidies, certain key marketing subsidies such as transportation subsidies and marketing credits (which act like input subsidies) would have to be included in the negotiations to cover at least 80 percent of support among the major traders.

Government Support by Commodity

Myles Mielke and Ron Trostle

Most governments intervene in agricultural commodity markets. The methods and degrees of intervention differ among commodities and countries and change over time. Questions that might be raised are: What products are subsidized (or taxed) most heavily? Is the degree of intervention increasing or decreasing? What types of policies are most important in each commodity market? What are the trade implications of the commodity PSEs?

The PSE data base includes 106 country/commodity pairs from an 18-commodity by 17-country matrix (50). The number of countries included in the coverage of a single commodity ranges from 12 for wheat to only 1 for a number of minor commodities. Although the data base is far from complete, analysis of selected data provide some insights into important questions. The principal countries excluded were the communist bloc countries. The PSEs for this paper were calculated as net transfers to producers, after subtracting negative transfers (taxes) from total subsidies.

Results of the Commodity PSE Analysis

Between 1982 and 1986, total net subsidies to producers covered by the 106 country-commodity pairs averaged $96 billion a year. These transfers to producers were equivalent to about 30 percent of adjusted producer income (see methodology section), which was $316 billion; that is, the average PSE was 30 percent. The global commodity PSE was 34 percent for the industrial market economies (IMEs) and 10 percent for the developing economies (LDCs).

Food grains and dairy were the commodity categories with the largest transfers, both averaging about $28 billion between 1982 and 1986 (table 4). Meats and feed grains were the next largest categories at $23 and $12 billion. Subsidies to sugar and oilseeds producers in the sample were much smaller, averaging $3.6 and $2.3 billion. Total cotton transfers were a negative $0.6 billion because two of the four countries included in the cotton sample taxed rather than subsidized their producers.

For some commodities, the value of transfers in the selected countries exceeded the value of total world exports (fig. 4). To some extent this comparison is biased by the country/commodity coverage in the ERS sample, but for most commodities the coverage of world exports is two-thirds or better (table 5). Dairy subsidies were 2.5 times larger than the value of world dairy product exports because many countries heavily subsidize producers even though only a small percentage of production was exported. Subsidies to meat and food grain producers were half again as large as world exports of these products. The value of subsidies was well below the value of trade for feed grains, sugar, and oilseeds. For these commodities, the percentage of production traded is generally larger.

To compare transfers across commodities, we express PSEs in percentage terms as the ratio of the value of transfers to adjusted producer income (table 4, fig. 5). Although the total value of transfers for food grains was slightly higher than for dairy, the percentage PSE for dairy products averaged 56 percent between 1982 and 1986 compared with 34 percent for food grains. Total transfers to sugar producers ranked near the bottom, but the PSE (47 percent) was the second highest among the

Table 4--Global commodity PSEs, 1982-86 average

Item	Unit	Food grains 1/	Feed grains 2/	Oil-seeds 3/	Meats 4/	Dairy 5/	Sugar 6/	Cotton 7/
(1) Production	1,000 mt	374,395	373,980	93,198	60,050	207,557	21,789	4,286
(2) Adjusted producer income	$ million	82,856	44,407	19,927	109,826	49,212	7,776	2,183
(3) Effective producer price (2/1)	$/mt	221	119	214	1,829	237	357	509
Transfers to producers: 8/								
Price support	$ million	19,630	3,171	-247	18,230	25,698	3,440	-762
Income support	$ million	3,894	4,993	898	462	75	17	2
Input support	$ million	1,786	2,049	665	1,021	471	35	169
Market support	$ million	743	318	238	537	19	7	1
Structural support	$ million	2,352	1,104	785	2,566	1,340	124	1
(4) Total transfers	$ million	28,406	11,635	2,339	22,816	27,603	3,623	-589
(5) PSE (4/2)	Percent	34.28	26.20	11.74	20.77	56.09	46.59	-26.98
(6) Transfers per unit of output (4/1)	$/mt	76	31	25	380	133	166	-137
(7) Exchange rate adjustment 9/	$ million	-176	547	461	-10	0	-34	-15
(8) PSE with exchange rate adjustment (4+7)/(2)	Percent	34.07	27.43	14.05	20.77	56.09	46.15	-27.67

1/ Wheat and rice. 2/ Corn, sorghum, barley, oats, and rye. 3/ Soybeans, rapeseed, flaxseed, and peanuts (raw only). 4/ Beef, pork, poultry, and sheepmeat. 5/ Fluid and manufacturing milk. 6/ Sugarcane and sugar beets. 7/ Lint cotton. 8/ The five policy categories are defined in table 1 of this report. 9/ The exchange rate adjustment was only calculated for Argentina, Brazil, Mexico, Nigeria, and South Africa.

Source: (50).

Table 5--Commodity PSEs, country and trade coverage 1/

Commodity	Number of countries 2/	Share of world-- 2/		PSEs				
		Exports	Imports	1982	1983	1984	1985	1986
	No.			Percent				
Wheat	13	74	2	10.6	11.7	5.3	5.8	36.2
Rice	11	66	11	1.8	9.5	11.0	12.7	20.1
Corn	10	86	4	15.3	32.1	15.4	21.6	48.1
Barley	6	65	7	8.2	19.2	7.8	18.8	50.0
Other coarse grains	5	81	17	6.7	16.4	5.4	15.5	37.4
Soybeans	10	95	27	5.9	7.4	-1.7	7.1	14.3
Rapeseed	3	92	NA	29.8	24.6	18.3	28.7	39.3
Cotton	4	12	1	-21.6	-4.3	-20.4	2.5	-33.9
Sugar	8	8	5	18.2	54.7	76.6	59.2	33.6
Dairy	8	60	4	40.6	37.3	46.5	45.9	59.8
Beef	9	73	7	18.7	19.7	20.8	11.2	22.3
Pork	6	68	8	11.3	13.8	9.6	12.6	20.7
Poultry	7	54	9	13.7	17.2	13.5	14.6	22.3
Average PSE across 13 commodities				12.3	19.9	16.0	20.5	28.5

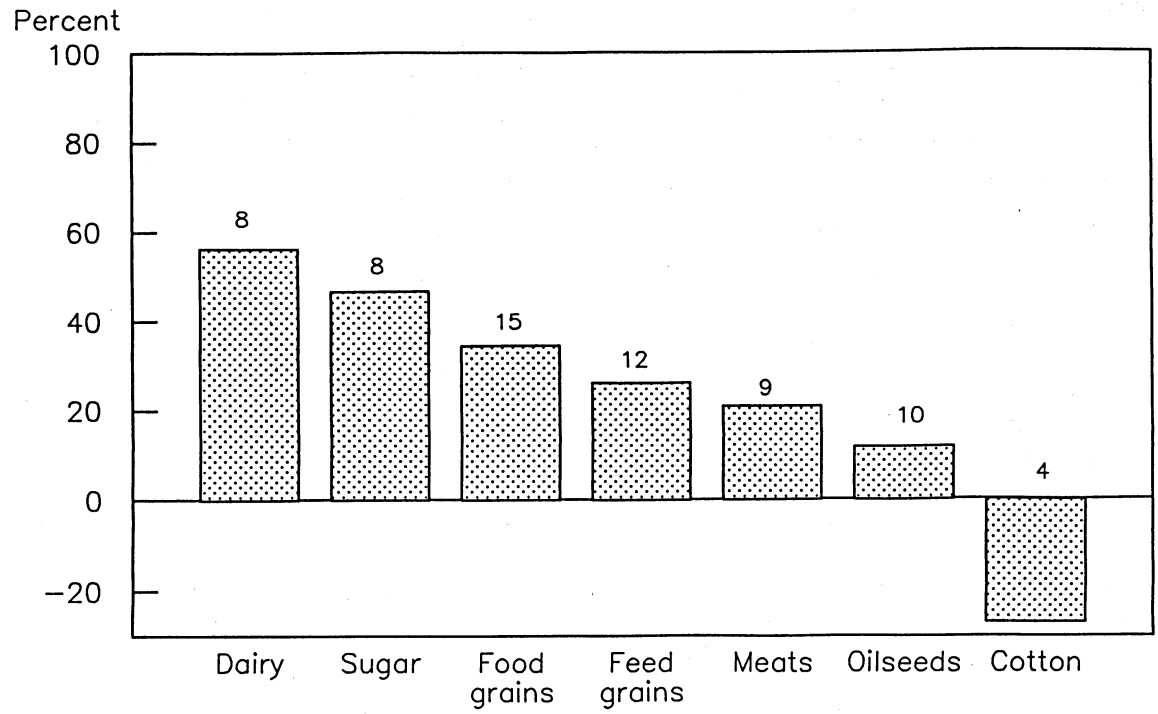
1/ Commodity PSEs were calculated by aggregating country PSEs weighted by production.
2/ Refers to those countries for which PSEs are included in the analysis.
NA = not available.
Sources: (15) and (50).

Figure 4

Value of PSE transfers and world trade (1982–86 average)

Figure 5

Commodity PSEs by category (1982–86 average)



The numbers above the bar represent the total of different countries contributing to the commodity PSE.

commodity categories. Cotton was the only commodity with a negative PSE (-27 percent); however, the United States was not included in the selected countries in the cotton sample.

There have also been large variations in PSEs, both among products within a commodity category as well as among countries in a commodity category. The range for all PSEs was very large, from -297 percent for cocoa in Nigeria to +98 percent for wheat in Japan. Among the oilseeds, the production-weighted average PSE for soybeans (6 percent) was well below that for rapeseed (28 percent). The PSEs within the meats category ranged from 14 percent for pork to 47 percent for sheepmeat. In food grains, 12 wheat-producing countries had an average 16-percent PSE while the average PSE for rice in 11 countries was only 12 percent. Although there were only a few countries in the sample for individual coarse grains, the PSEs ranged from 9 percent for oats and rye to 27 percent for corn.

Even for an individual commodity, there is wide variation among the PSEs for each country. For eight commodities, one or more countries had negative PSEs, indicating their producers were taxed rather than subsidized. Cotton producers in LDCs in particular had large negative PSEs.

Growth and Stability of Commodity PSEs

The level of intervention increased for nearly all commodities between 1982 and 1986. The simple annual average PSE for the 13 commodities in the study rose steadily and doubled during the 5-year period. For 11 of 13 commodities, the PSE was the highest in 1986 (table 5). For example, the average 11-country production-weighted PSE for rice rose from 2 percent in 1982 to 20 percent in 1986. The PSE more than tripled for wheat, corn, barley, and other coarse grains, and more than doubled for soybeans. Except for cotton, all of the crop PSEs rose faster than livestock PSEs (table 5).

The PSEs for crops were higher than for meat products and showed more year-to-year variability. The U.S. Payment-in-Kind program in 1983 was the major factor in the 1-year jump in the global PSE for all grains. Argentine and Brazilian increases in export and domestic taxes in 1984 contributed to a drop in the world soybean PSE. The livestock product PSEs grew more slowly, and were less volatile because production, prices, and government programs all fluctuate less than for crops.

Although only a few countries played major roles in increasing the PSEs for each of the commodities, higher rates of government intervention were generally spread across most countries. The sharp 1986 rise in PSEs for crops may have been due to increasing competition in world markets and the effect of the weaker U.S. dollar on the PSEs for Japan and the EC. The EC's higher export subsidies and U.S. deficiency payments, loan forfeiture benefits, and the Export Enhancement Program (EEP) were major factors in the grain markets. Input and credit subsidies and price support and licensing policies for grains also rose in Mexico, South Africa, and several other countries. Canada's Western Grain Stabilization Act and the initiation of the Special Canadian Grains Program (SCGP) boosted its PSEs in 1986. State control of grain marketing in Japan and Indonesia and price stabilization programs in Korea significantly increased transfers to producers in 1986.

The largest contributors to higher oilseed PSEs in 1986 were U.S. commodity loan benefits and input subsidies through the Farmers Home Administration, and Brazilian production and marketing subsidies. EC deficiency payments rose significantly in 1985 and again in 1986. Canada initiated the SCGP for oilseeds in 1986.

Although PSEs did not rise as fast for the livestock products, intervention did increase in most countries. EC export subsidy rates rose for poultry, pork, and beef. EC support through national programs were not included in the data base. Korea's support for poultry through its price stabilization program rose in 1985 and 1986. State control of marketing systems contributed to higher PSEs in Taiwan and Japan. Provincial programs in Canada and State programs in the United States were also important in the livestock sectors. U.S. input subsidies were important for livestock and the EEP benefited poultry in 1986.

The EC was the largest contributor to the high world dairy PSE. Its PSE rose steadily and jumped in 1986 when increased export subsidies for dairy products much more than offset higher co-responsibility levies on producers. The U.S. dairy PSE was lower than the EC's, but more volatile because of year-to-year changes in U.S. dairy policy.

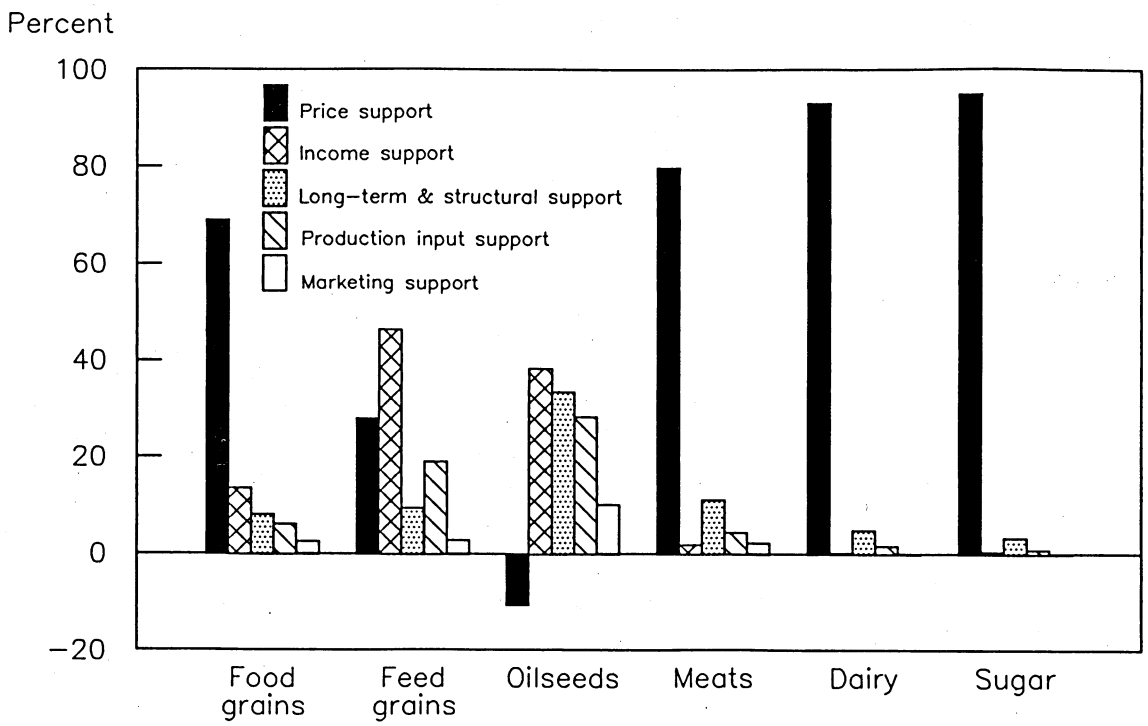
Commodity PSEs and Policy Instruments

The policy mix contributing to the make-up of the commodity PSEs is important in terms of the implications for trade. For example, policies affecting agricultural prices directly relate to a commodity's competitive trade position, while policies designed to improve farm extension programs may be relatively trade neutral, at least in the short run.

Policies were grouped into five categories that contributed to the PSE measurement. For most commodities, and for developed market economies and LDCs alike, the most important policy component of the PSE was price support (table 4 and fig. 6). This policy group includes border policies and domestic price policies. Price support policies were predominant for food grains (accounting for 69 percent of total transfers to food grains), meats (80 percent), dairy (93 percent), and sugar (95 percent).

Figure 6

Share of commodity PSE attributed to policy categories, (1982-86 average)



In the case of cotton and soybeans in the LDCs, the PSE is negative for the price support component, indicating that producer prices were below international levels. The price support component of the cotton PSE was negative for India, Mexico, and Pakistan, and for soybeans in Argentina, Brazil, and India. However, positive transfers from other policies more than offset the negative transfers to soybeans; in particular, subsidies on producer inputs, income support, and long-term or structural support programs (table 4).

Income support was the most important component of the feed grain PSE (43 percent of all transfers) and oilseeds (38 percent). U.S. direct payments to corn producers were by far the largest portion of the income support component for feed grains, accounting for 82 percent of world feed grain transfers. The EC-10 dominated the transfers to oilseeds under the income support category. Income support as a policy tool was almost nonexistent in the LDCs except for meats and dairy in South Korea.

Structural support subsidies were the third largest contributor to producer transfers, with most benefits going to grains and oilseeds. U.S. corn and soybean producers and Japanese soybean producers were the principal beneficiaries of these policies.

Input subsidies were relatively important for oilseeds, cotton, and feed grains, although they generally contributed less than price support policies. There was a large input price component for oilseeds based mostly on U.S. and Brazilian soybean policies. These two countries and Mexico accounted for 90 percent of the input subsidies to feed grains.

Marketing support was by far the smallest PSE policy component for all commodities, averaging only 2 percent of total transfers during 1982-86. These programs include subsidies on marketing costs, transportation, and inspection services. Marketing subsidies were most important for oilseeds in Brazil, Canada, and the United States.

A separate category was reserved for adjustments that compensated for distortions in LDC exchange rates that were used in the calculation of PSE components (see methodology section). Although not strictly an agricultural policy, the exchange rate adjustment was in some cases significant to the point of reversing the transfers to producers. In the case of Argentine wheat and corn producers, for example, an undervalued exchange rate during 1982-86 was large enough to offset negative transfers to producers caused by export taxes.

Concluding Remarks

Based on the PSE methodology, the most heavily protected commodity sectors were dairy, sugar, and food grains. The IME's contributed most to the level of the PSE for these commodity groups, primarily because a small number of LDCs were represented in the ERS sample, except for food grains. The largest shares of total transfers going to dairy and sugar were attributed to the United States and the EC. For food grains, the United States and the EC contributed the largest portions of the total transfers to wheat, whereas for rice, it was Japan and South Korea. The average PSEs for feed grains and meats were somewhat smaller than the average PSE for all commodities. Producer subsidies for corn in the the United States alone accounted for over

half of all transfers to feed grains, and subsidies to EC beef producers accounted for almost half of all meat subsidies.

On the opposite end of the PSE spectrum, oilseeds had the smallest positive PSE. This finding was based on a fairly comprehensive sample of major producers and exporters of oilseeds. The average PSE for oilseeds in the LDC's was almost zero, reflecting a substantial amount of taxation, especially in Argentina and Brazil, that offset producer subsidies. Cotton was the only commodity for which the average of all country PSE's turned out negative. This was due to the small number of countries in the ERS data base and the negative PSE's recorded for most of those countries in the sample (India, Pakistan and Mexico).

The policies which contributed most to the level of protection were those identified as price support policies. This policy category accounted for 72 percent of all producer transfers. In general, net agricultural exporters (such as the United States) used price supports to promote production and trade, while net importers (such as Japan) used trade barriers to protect domestic producers. In order of what they contributed to total producer transfers, the other policy categories were income support (11 percent), structural support (9 percent), input subsidies (7 percent), and marketing support (2 percent).

If it is decided during the Uruguay Round to reduce government protection by substantially lowering producer subsidies, the absolute level of the commodity PSE has important implications. Those commodities with relatively large PSEs would presumably undergo the largest adjustments. Reducing or eliminating producer transfers to milk, sugar, and food grains, where transfers account for a significant portion of producer income, could significantly benefit consumers and taxpayers. Consumers of those highly supported commodities would presumably gain from lower prices, especially if producer transfers were largely the result of price support policies. Taxpayers could gain from lower government expenditures on producer subsidies. This situation illustrates, once GATT subsidy goals have been established, the importance for each country to decide which commodities are to be chosen for subsidy reductions, to what degree the reductions will be carried out, and over what period of time the reductions are to take place.

The relative magnitudes of the commodity PSEs also have implications for future supply and demand. Reductions in commodity PSEs will affect the interaction between crops that are substitutes (for example, soybeans vs. corn) and between complementary commodities, such as livestock and feeds. The latter category also has implications for the demand for commodities resulting from changes in producer subsidies. One example would be the effects on the derived demand for feed inputs (grains and oilseeds) resulting from lower livestock subsidies. These effects will depend to a large degree on the cross-price relationships among commodities and the time allowed to make the adjustments.

In addition to the above factors, the effects on commodity trade would also depend on the mix of policies used for each commodity, the relative trade share of the commodity, and other factors that make each country/commodity combination unique. These would include resource availabilities, degree of technological development, different marketing systems, and social and other noneconomic factors (4).

Government Support Across Countries: Effects of Development and Net Trade Position

David W. Skully

The degree and bias of government intervention vary greatly among commodities within a single country and, for a given commodity, vary considerably across countries (tables 6 and 7). The argument developed here is that these differences in intervention are not random. Rather, there are predictable patterns in the direction of intervention among countries.

Government intervention in agricultural markets is largely the product of the competition among political factions for support. Factions in power try to stay in power, and factions in opposition strive to gain control. This section discusses, first, how the processs of economic development changes the balance of power among competing economic interests and, consequently, changes the bias of intervention; and second, how a country's position as an importer or exporter of a particular commodity influences the bias of intervention.

A variety of justifications for intervention in agriculture exist, among them: national security, protection of rural lifestyles, job creation (or preservation), elevation of incomes in rural and disadvantaged regions, environmental, health, and phytosanitary concerns, improvements in the balance of trade, and retaliation pure and simple against trading partners. There are also many means of attaining these goals; tariffs, quotas, subsidies, production controls, national marketing boards, and public distribution systems are some of the most commonly employed. In evaluating the best means to a given end, economists try to determine which policy is the most efficient; that is, the one which will distort the allocative operations of markets the least. Politicians tend to employ a different criterion: in the struggle for power the best policy is the one which maximizes political support. This divergence in criteria is apparent in most existing agricultural policies.

For example, many countries try to ensure a sufficient supply of basic commodities to meet normal domestic consumption needs. Toward this end, an economist might propose establishing national buffer stocks to be filled by competitive tender from the cheapest supplier, foreign or domestic. Politicians seeking greater voter support might amend this proposal by limiting the bidding to domestic suppliers. From an economic point of view, such a restriction raises domestic prices above international levels and propagates costly distortions in the domestic economy. From a political perspective, however, the increased political support of domestic producers may be more important than the increased opposition of consumers of the controlled product. Rice policies of Japan, Korea, and Taiwan, sugar policies of the United States, Japan, and the EC, and dairy policies of almost all countries fit this category. All policies are political acts and reflect the primacy of political considerations in their construction.

Economic Development and the Development of Protection

Economic development involves the transformation of the structure of a country's economy. While each country's path of development is unique, there

Table 6--PSEs, 1982-86

Commodity	Argentina	Australia	Brazil	Canada	EC-10	India	Indonesia	Japan	Mexico
					Percent				
Overall PSE	22.1 1/	11.1	9.2	31.0	35.4	-17.8	14.4	71.7	41.3
Wheat	4.8	6.8	63.4	30.4		-35.3		97.8	18.8
Durum					38.4				
Soft					25.0				
Corn	.3		4.0	10.0	24.8				53.1
Barley		2.9		32.1	14.2			96.9	
Rice		13.8	51.3		46.6	-16.9	14.4	88.2	
Sorghum	-27.4								36.5
Oats				9.7					
Rye				27.2					
Soybeans	-14.7		.1	13.5	46.9	-11.4		71.0	45.0
Rapeseed				29.9	44.6	3.0			
Flaxseed				25.5					
Peanuts						17.3			
Beef and veal		6.4	-33.1	9.9	44.6			59.0	
Pork				10.7	15.1			47.5	
Poultry			6.2	16.7	28.7			22.6	
Eggs									
Sheepmeat		4.2			45.5				
Dairy milk				73.7	44.1				
Manufactured		23.2						95.3	
Fluid		50.0						91.6	
Wool									
Cotton		4.6							14.3
Long						-23.9			
Medium						-14.0			
Sugar		12.9		34.6	45.4				
Beet								67.6	
Cane								77.0	
Tobacco									
Mandarins								7.1	
Cocoa									

See footnotes at end of table.

Continued--

Table 6--PSEs, 1982-86--Continued

Commodity	New Zealand	Nigeria	Pakistan	South Africa	South Korea	Taiwan	Thailand	United States
					Percent			
Overall PSE	25.4	-40.8	-19.8	28.6	59.5	19.2	1.3	24.6
Wheat		-18.7		18.3	59.9	64.8		36.5
Durum								
Soft								
Corn		2.8		50.3	59.4	70.1		27.1
Barley					65.6			28.8
Rice		-42.6			72.1	28.1	1.3	45.2
Sorghum						74.3		31.4
Oats								7.6
Rye								
Soybeans					74.9	57.3		8.5
Rapeseed								
Flaxseed								
Peanuts								
Beef and veal	12.1				66.4	18.4		8.7
Pork					-1.2	1.9		5.8
Poultry					41.5	23.4		8.3
Eggs					11.8			
Sheepmeat	144.1							
Dairy milk					46.4	42.9		53.9
Manufactured	11.8							
Fluid	24.6							
Wool	15.2							
Cotton		-135.8	-19.8					
Long								
Medium								
Sugar		-189.4		-11.8		29.2		77.4
Beet								
Cane								
Tobacco						43.0		
Mandarins								
Cocoa		-296.6						

1/ Overall PSE is not weighted by each year's value due to distortions of inflation.
2/ 1982-85 averages.
Source: ERS calculations.

Table 7--CSEs, 1982-86

Commodity	Argentina	Canada	EC-10	India	Indo-nesia	Japan	Nigeria	South Africa	South Korea	Taiwan	United States
						Percent					
Overall CSE	22.1	-11.5	-14.8	3.7	-21.7	-38.8	55.1	15.1	-58.1	-26.0	-12.3
Wheat	9.1	-2.7		20.8		-31.5	217.3	21.9	17.2	-9.2	-2.0
Durum			-28.1								
Soft			-14.8								
Corn	14.6	-1.5	-12.1			-2.4	202.0	14.3		-18.1	
Barley		-.1	-8.0			-17.8			-70.8		-7.9
Rice			-10.0	3.2	-21.7	-63.6	23.3		-69.5	-28.8	
Sorghum	34.0									-15.5	
Soybeans	31.9								-72.7	-20.2	
Oil				-34.7							
Meal				33.9							
Rapeseed oil				-49.1							
Rapeseed meal				46.7							
Peanut oil				-38.9							
Peanut meal				35.9							
Beef and veal			-.7	-14.6		-32.8			-72.3	-11.3	-.8
Pork			-.3	-3.3		-21.0			-8.8		
Poultry			-4.1	-13.7		-8.0			-39.7	-38.9	-1.2
Eggs									-20.9		
Sheepmeat				-20.2							
Dairy (or milk)						-43.5			-67.7	-9.8	
Fluid		-36.4	-14.0			-35.0					-27.9
NFDM		-43.0	-27.9								-53.2
Butter		-83.1	-30.4								-32.2
Cheese		-26.1	-14.5								-16.4
Cotton							187.3				
Long				23.3							
Medium				26.2							
Sugar		-4.0	-29.2			-50.4	179.8	9.2	-69.5	-65.4	-59.1

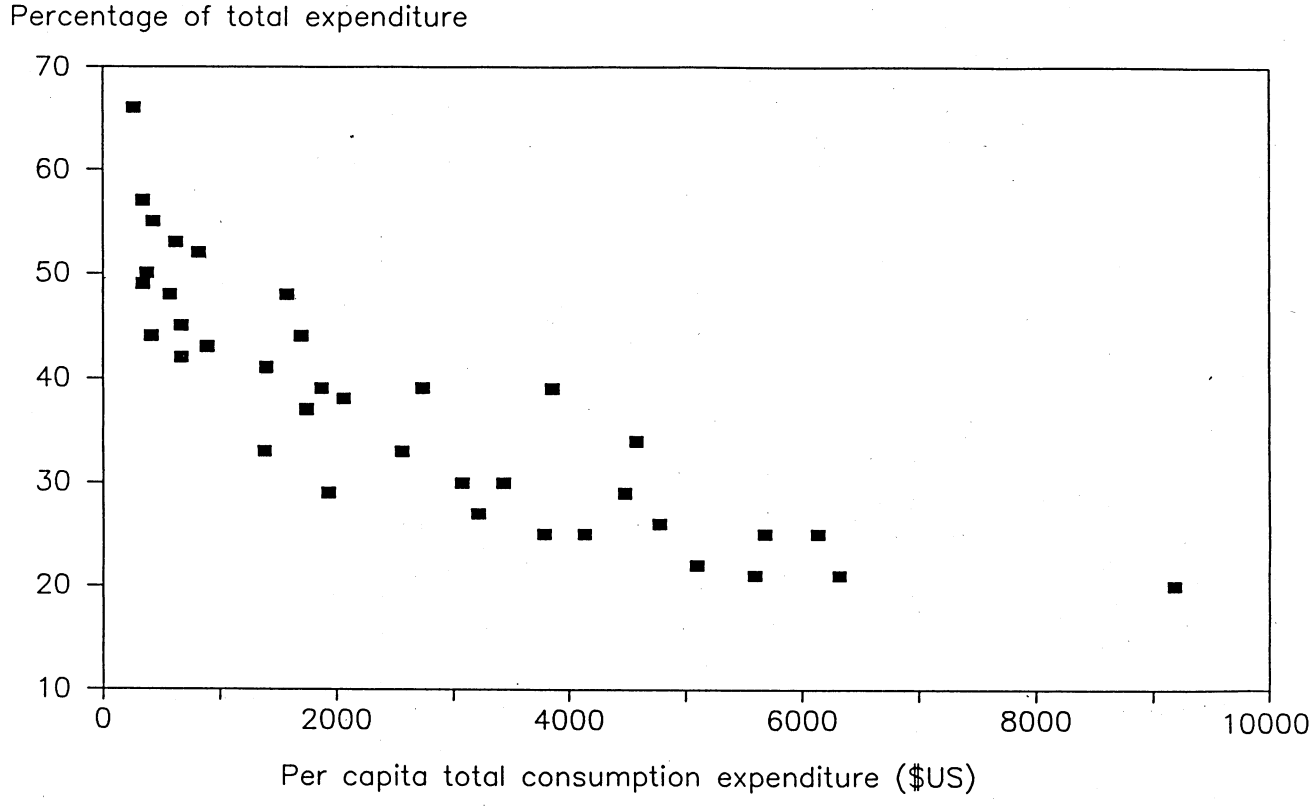
1/ Averages not weighted by annual consumer costs.
Source: ERS calculations.

are some universal patterns of development which help account for the differences we observe between food and agricultural policies in industrial market economies (IMEs) and those in LDCs. One universal pattern economists have observed is in the transformation of consumption. As a family's income increases, the proportion of its income spent on food declines. A very poor family may spend virtually all its resources merely to feed itself, while a rich family may eat excessive amounts of luxury foods and spend only a negligible proportion of its income on food. Consequently, the retail price of food is of greater significance to lower income households than to richer households.

Figure 7, drawn on the basis of a compilation of national household surveys and national accounts by the FAO, shows the inverse relationship between a country's per capita income and the proportion of household expenditure spent on food. In the poorest nations, over half of national consumption expenditure is for food, while the proportion is only one-fifth in the richest nations. These are national figures and therefore understate the importance of food in the budgets of poor families in poor countries, and overstate that magnitude of the food share of rich families in rich countries. The surveys date from the mid-1960s but, for the graph, per capita incomes have been converted to 1987 dollars. The United States and India are the highest and lowest income countries in the data set.

Figure 7

Food budget share and development



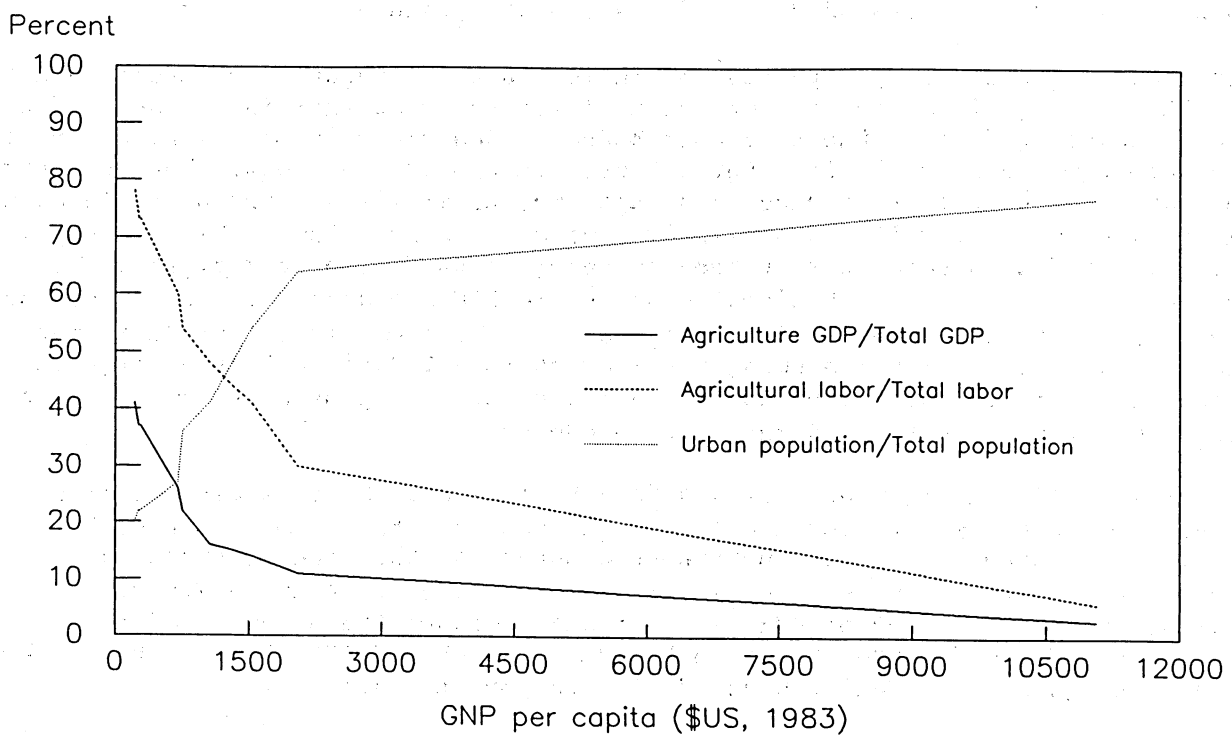
Source: (12, tables IV.1.1 and IV.1.2, pp. 94–95)

The second universal pattern of development is urbanization. Internal trade expands in the course of economic development, and the division of labor among activities increases. In the least developed nations, most of the population lives in isolated rural areas and most of their labor is devoted to producing food and other essentials for their own use or for trade in a limited local market. As internal trade expands, more people seek urban employment and rural households begin to produce crops to trade for city-made goods. The vast majority of the population is engaged in nonagricultural activities in the latter stages of industrialization. Figure 8 shows how agriculture as a share of GDP and agricultural labor as a share of total labor decline in importance with development and how urbanization increases with increases in GNP per capita.

The number of farmers decline relative to total population in the course of development, and the remaining farmers become much more specialized. LDC farmers will tend to produce a wide variety of crops and market only a small proportion of their total output. Most IME farmers specialize in one or two products and market virtually all of their output. Consequently, the producer price of an agricultural commodity will have a much greater effect on the income of IME farmers than on LDC farmers.

Figure 8

Urbanization and development



Source (54). The data points are the group average values for groupings of countries devised by the World Bank, such as low-income Africa, low-income Asia, middle-income, centrally planned, industrial market economies.

These three transformations (consumption, urbanization, and specialization) help account for much of the difference between LDC and IME agricultural policies. Because food constitutes a large portion of LDC household costs, changes in retail food prices directly affect family income. Sharp food price increases are often the cause of riots and occasionally precipitate the overthrow of a regime. Consequently, many LDC governments have policies which attempt to stabilize the retail price of food at a "popular" level. Retail subsidies, price ceilings, milling rebates, buffer stocks, public distribution systems, trade controls, and sometimes overvaluation of exchange rates are employed to keep prices stable and low.

Households are not the only group with an economic stake in low food prices. Many LDCs rely on the export of labor-intensive products for foreign exchange earnings. High food costs force employers to offer higher wages, and higher labor costs can undermine the export competitiveness of labor-intensive products. Depending on how they are financed, consumer food subsidies can be a means of assisting manufactured exports.

LDC producers are generally widely dispersed in rural areas, are many in number, are generally not dependent on a single commodity for their income, and are rarely organized politically because communication among rural areas is difficult. Because LDC producers are generally politically weak, they are vulnerable to being taxed. Some countries demand delivery of strategic commodities at below market prices. Others demand a share of production. Taxes on exports are often imposed, and restrictions on marketing or on input supplies are common forms of indirect taxation. One generally expects to find that LDCs subsidize the consumers of staple foods and tax producers.

The factors influencing intervention in IMEs are the opposite of those in LDCs. In IMEs, food prices are not much of an issue for most families because of the small share of food in the household budget. Consumers in most IMEs pay prices far above world market prices for butter, fresh milk, and sugar, but this form of taxation has rarely emerged as a major political issue. Moreover, in most IMEs, low-income families, the likely sources of opposition to high food prices, are targeted with some form of food or income subsidy, which mitigates the effect of these taxes. In direct contrast to LDC producers, IME producers are relatively few in number, rely on only one or two commodities for their income, and, because communication among rural areas is not difficult, they organize and lobby effectively for price and income supports. One generally expects to find that IMEs tax consumers and subsidize producers.

Figures 9, 10, and 11 plot PSEs and CSEs to indicate the consumer and producer biases for rice, wheat, and sugar in countries for which comparable data are available. Countries in the northwest quadrant of the figures subsidize consumers and tax producers, while countries in the southeast quadrant tax consumers and subsidize producers. The data support the argument of this section: LDCs tend to be in the northwest quadrant and IMEs tend to be in the southeast quadrant. Tables 6 and 7 also support the argument.

Exporters, Importers, and Intervention

A second dimension of country characteristics that needs to be examined is a country's net agricultural trade position. The influence of net agricultural trade on a government's policy choices depends on the importance of agriculture in the national economy and on the importance of agricultural exports in total exports. These characteristics are related to the level of economic development.

Figure 9

Rice PSEs and CSEs (1982–86 averages)

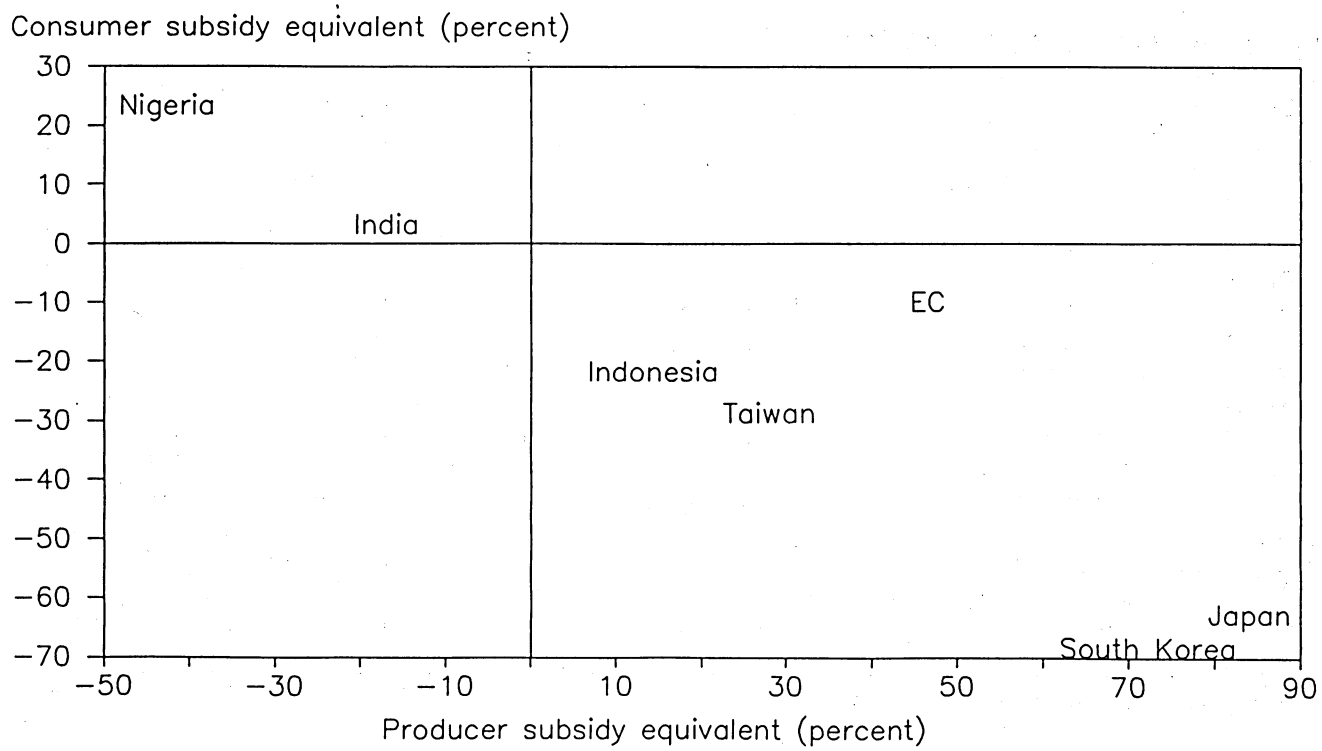


Figure 10

Wheat PSEs and CSEs (1982–86 averages)

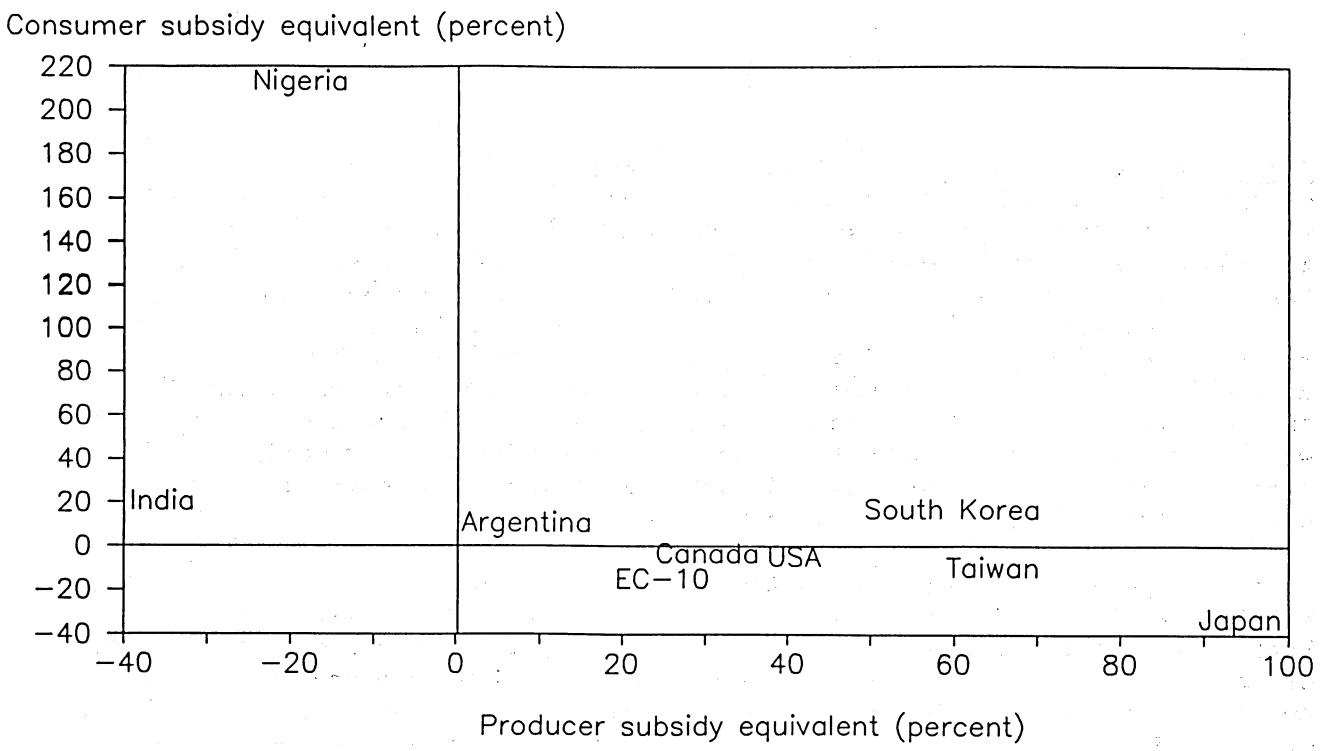
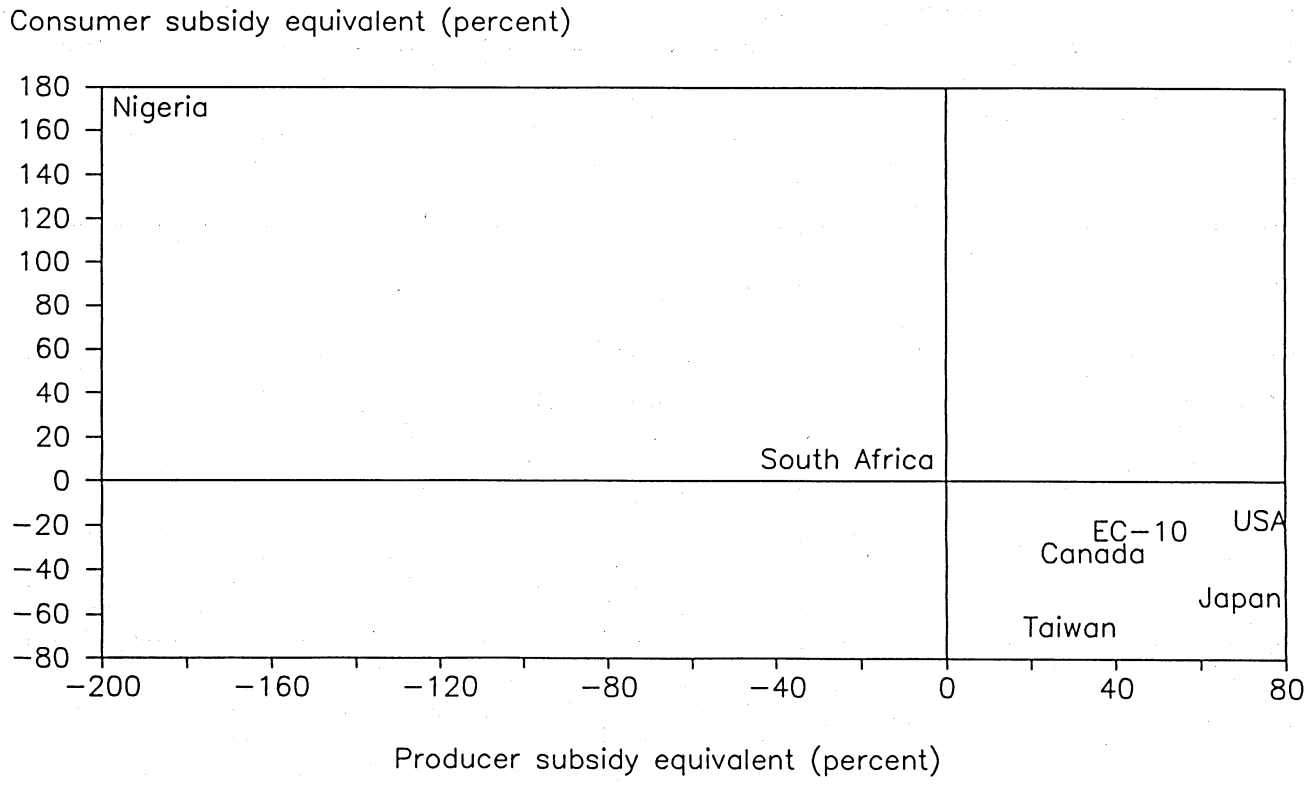


Figure 11

Sugar PSEs and CSEs (1982-86 averages)



Exporters. LDCs tend to depend on the export of only one or two primary products for the bulk of their foreign exchange earnings. The performance of the national economy can advance or decline with export prices. Many governments have established export marketing boards in order to control and tax the export of important commodities (5). For some governments, the primary sources of public revenue are export taxes and duties on imported manufactured goods. This pattern of taxation is understandable. First, collection costs are relatively low (processing plants, railways, and ports are easy to monitor) and, second, there are few alternative sources of liquid wealth to tax in an undiversified economy. The PSEs for virtually all LDC export commodities are negative, indicative of the taxes collected: this is the case for India, Nigeria, Pakistan, and Thailand.

Argentina, Australia, and New Zealand combine elements of both LDCs and IMEs. These were the three richest nations in the world in per capita terms at the beginning of the twentieth century (34). The wealth was based on the export of meat, hides, wool, and grain. Dominance of agriculture gave rise to the Australian expression that "the economy rides on the sheep's back." The three nations adopted policies of industrialization behind the barrier of infant industry tariffs. The incidence of industrial protectionism remained high until the late 1980s and inhibited the diversification of exports away from

agricultural exports. In this manner, they are similar to LDCs. Grains and animal products account for over one-third of export earnings in Argentina and New Zealand, and over one-quarter in Australia. The PSEs for exported commodities are negative in Argentina, where export taxes are still levied, and positive but very low in Australia and New Zealand where the indirect tax of industrial protection is not incorporated in PSE calculations.

The United States, Canada, and the EC are major exporters of agricultural commodities. However, unlike most LDCs and Argentina, Australia, and New Zealand, agricultural exports comprise only a small proportion of total merchandise exports, and an even smaller proportion of exports of goods and services. Their large and diversified economies provide alternatives to agriculture as a source of tax revenue. In fact, farming interests in these nations have gained the political power to defend themselves from taxation even as their relative and absolute numbers have declined. As technological and biological advances have lowered the costs and the prices of agricultural products relative to urban products, farmers in these countries have been successful in creating and enforcing a right to have the government intervene to support farm incomes when they fall relative to urban incomes.

The effects of farm income support programs often conflict with the ability of farmers to export their produce at a profit. As is often the case in policy formation, one distortion begets another. The agricultural policies of the United States, Canada, and the EC are no exception. A variety of export subsidies, marketing loans, dual pricing policies, export restitutions, and direct cash payments have been necessary to realize the dual goal of fair farm incomes and export competitiveness.

Importers. The entry of imported agricultural products is always viewed as a threat by competing domestic producers. In a free market, less efficient domestic producers unable to compete with imports will either shift resources to a more efficient mix of products or completely exit agriculture. Imports allow domestic resources to be employed more productively, while the economy generally benefits. The allocative efficiency gains from this free trade scenario have rarely been realized by IMEs. The few cases are exceptions that prove the rule that the import of primary food items breeds protective agricultural policies.

The history of IME agricultural trade policy is marked by several waves of protectionism (45). The brief era of free trade following the repeal of the Corn Laws in Britain (1846) and the Anglo-French Commercial Treaty of 1860 came to an end in agriculture in the 1880s when innovations in refrigeration allowed large meat imports from Argentina, Australia, New Zealand, and North America. At the same time these exporters also emerged as important grain suppliers. The reaction in most European countries was to tax or bar imports.

World War I forced the belligerents to increase agricultural imports, producing a golden age of agriculture for exporters like the United States. European production returned to normal in the 1920s, leading to worldwide gluts in most commodity markets. Agricultural groups in all IMEs lobbied hard for relief during the 1920s, but it took the Depression to force governments to intervene in agricultural markets on a large scale.

In most cases, efforts to increase government control of manufacturing preceded efforts to intervene in agriculture. Farm interests, traditionally wary of government-industrial cooperation, were appeased by policies designed

to support farm incomes. Support from farmers was critical in the passage of interventionist economic legislation such as the New Deal in the United States, French import tariffs, the agricultural programs of the National Socialist Party in Germany, and the policies of "Imperial" self-sufficiency in both Britain and Japan, where colonial suppliers were given trade preference.

The policies adopted by IMEs during the protectionist wave of the 1930s are remarkably similar. In essence, producers were legally encouraged or obliged to coordinate a reduction of production. A variety of means to this end were employed: production allotments or quotas, government guaranteed minimum prices with provisions for government surplus disposal or destruction, and legislative approval of anticompetitive cooperatives and marketing boards. All of these mechanisms required restrictions on imports for success. Between 1927 and 1931, levels of agricultural protection more than doubled in West European countries and, along with those of the United States and Japan, increased through the 1930s.

Today's IME agricultural policies are the legacy of the New Deal in the United States and the post-war reconstruction programs of Japan and West Europe. The relative political stability of IMEs since 1945 has allowed legislative factions, agricultural ministries, and producer interest groups to ally and dictate agricultural policy (6, pp. 309-327). The stability of these alliances helps account for the continuity and robustness of even the least defensible agricultural programs (30). Moreover, producers who have made investments in response to government programs are threatened with substantial capital losses if the programs were to be abolished. Once the benefits of government programs are capitalized into asset values, producer groups are motivated to demand either a continuation of such programs or compensation for their removal. Agricultural policies, once implemented, create their own constituencies, gain their own momentum, and are consequently politically difficult to repeal (16, 38).

The agricultural protection and trade tension among IMEs of the 1980s stands in marked contrast to the protectionism of the 1880s. The first protectionist wave was a reaction against competition from cheap, efficiently produced imports. The current wave is the indirect result of the remarkable advances in agricultural productivity stimulated by entrenched programs. Protected producers have been able to command high producer prices which have boosted productivity and generated surpluses of Japanese rice, EC wheat, dairy, beef, and sugar, and even Saudi wheat, to name only a few examples. These surpluses have been disposed of in the form of concessional food aid, or commercially via export subsidies and restitutions. The transformation of these traditional or potential importers into subsidizing exporters has enraged traditional exporters and led to the acrimonious trade tensions surrounding the inclusion of agricultural products in the current GATT round.

Newly Industrialized Countries. Taiwan, South Korea, Mexico, and Brazil are often categorized as newly industrialized countries (NICs). A NIC is distinguished from an LDC by the diversification of its economy into manufacturing and away from agricultural and extractive industries since the Second World War. The general pattern discussed above is that LDCs subsidize consumers of staple foods and tax producers, while IMEs tax consumers and subsidize producers. This pattern is related to the level of economic development. The pattern for NICs, with their intermediate level of development, is less clear. Brazil highly subsidizes wheat and rice production in order to minimize imports, yet provides low levels of support to

basic commodities such as corn, beef, soybeans, and poultry, similar to an LDC. Mexico provides moderate to high levels of support to the basic food grains, similar to an IME.

Taiwan and South Korea exhibit a pattern of intervention closer to that of Japan and other IMEs than to other LDCs. Government support, especially for basic food commodities such as rice, is high relative to the level of income and economic development, although both countries provide low levels of support to pork producers. Consumers are taxed, as in most IMEs. Are Taiwan and South Korea indicative of policies likely to emerge in other NICs, or are they, somehow, special cases?

Several strands of evidence support the view that Taiwan and South Korea are special cases. First, a number of scholars argue that there is a model of economic development unique to Japan, Taiwan, and South Korea (22, 23, 41). Among the common characteristics are high savings and investment rates, small but interventionist public sectors, competitive labor markets, and open, export-oriented industrial sectors. Alternative measures of development, such as the proportion of capital goods manufacture in GDP and the proportion of exports comprising capital goods, indicate that South Korea and Taiwan are structurally more industrialized than their per capita GDPs would indicate. They are certainly much more industrialized than either Brazil or Mexico (24). This helps account for the greater producer bias of their policies.

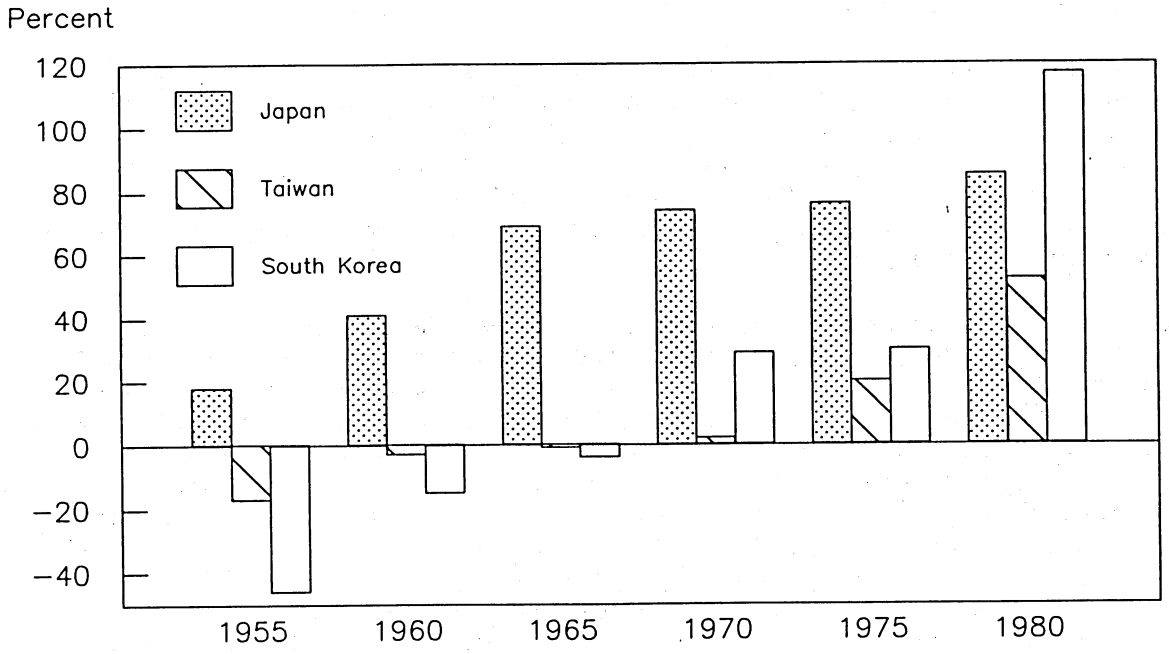
A second consideration is that both nations are net food importers, while Mexico and Brazil are net food exporters. Finally, a case can be made for an East Asian model of agricultural policy stemming from the common influence of geography, Japanese imperial policies, and the post-World War II political and military environment (2). Japan, South Korea, and Taiwan are densely populated mountainous countries with limited arable land. Under Japanese occupation, Taiwan (1895-1945) and Korea (1910-45) were developed as rice suppliers to metropolitan Japan. The programs of extension and research so successful in Japan were employed in the colonies and produced at least two generations of farmers experienced in modern methods of production and marketing. Since 1949 in Taiwan and 1953 in South Korea, both countries have existed as autonomous parts of divided nations. Military tension between Taiwan and China and between North and South Korea fostered siege mentalities which led to the adoption of the most risk-averse food security option: self-sufficiency.

Self-sufficiency in a basic grain like rice is an expensive option given the resource endowments of countries like Japan, Taiwan, and South Korea. Figure 12 shows that Taiwan and South Korea did not begin to adopt protectionist agricultural policies until the 1970s. Figure 13 shows a similar pattern for rice policies. South Korea leads Taiwan by about 5 years in its level of protection, as rice self-sufficiency became a national goal in Korea in the 1970s.

The shift from an anti-producer to a pro-producer bias is consistent with the sharp drop in agriculture's share of GDP between 1960 and 1970 in both countries and lags a similar shift in Japan by two decades (fig. 14). Rates of protection appear to have stabilized in South Korea during 1982-86, while they have continued to rise in Taiwan (19). The evidence does indicate a pattern of agricultural protection for Japan, Taiwan, and South Korea: the emergence of policies that subsidize producers and tax consumers at an earlier stage of economic development than has characterized other countries. It is a

Figure 12

East Asia: Effective rate of protection of agriculture



Note: Weighted average of 12 commodities.

Figure 13

East Asia: Nominal rate of protection for rice

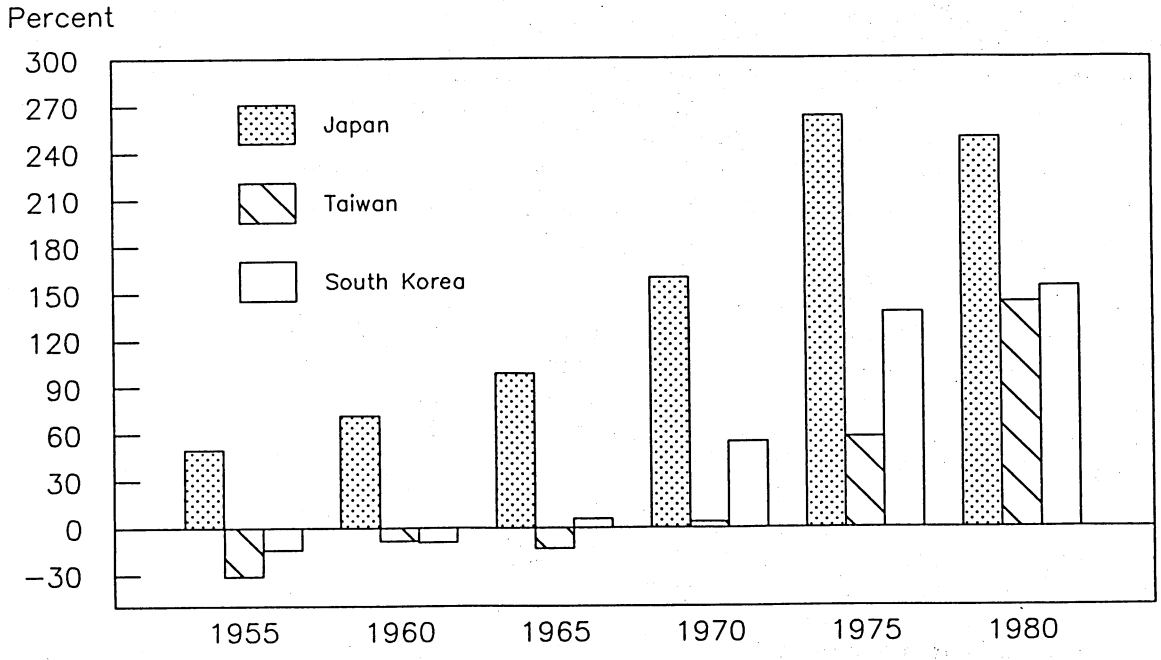
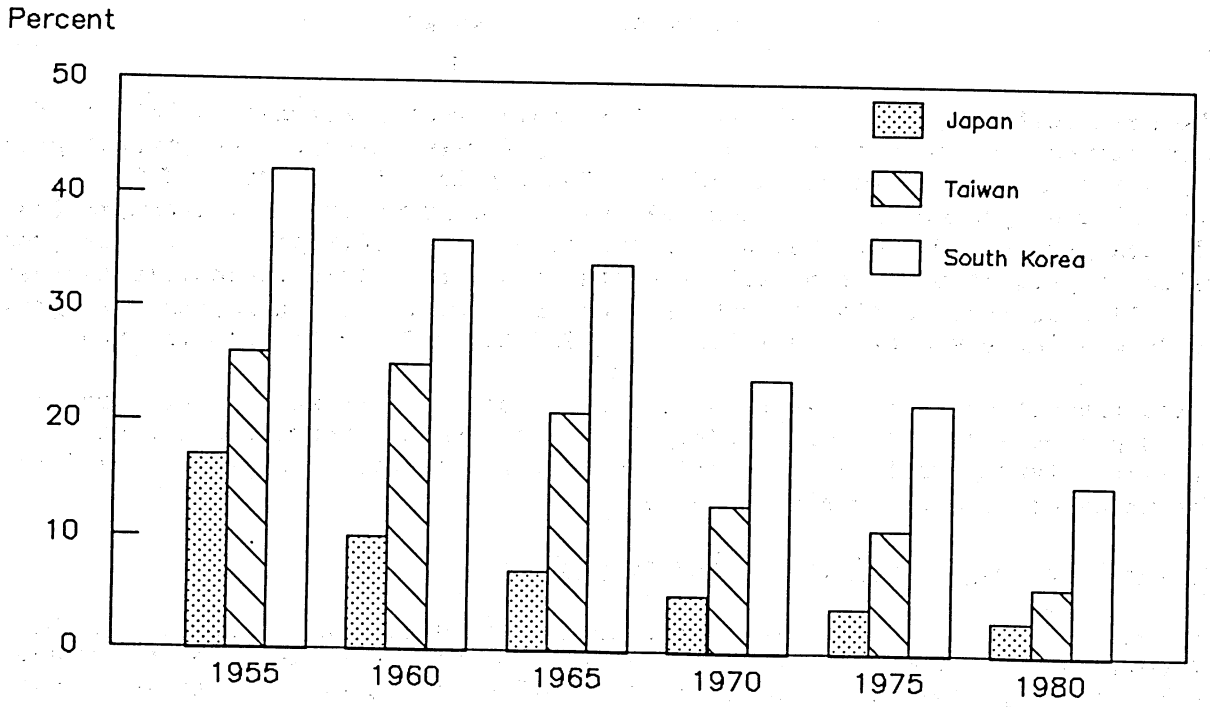


Figure 14

East Asia: Share of agriculture in GDP



pattern, however, that does not appear to have been mimicked by other nations. Hong Kong and Singapore have perhaps the most open agricultural trade policies in the world, primarily because they have virtually no agricultural sector. None of the other NICs shares the characteristics that Japan, Taiwan, and South Korea do, and it is unlikely that the pattern of agricultural protection exhibited in East Asia will be replicated in other NICs at similar income levels.

REGIONAL ANALYSES

This section provides policy details and analysis by geographic region, complementing the more general approach of the first section. It summarizes the objectives, mechanisms, and extent of intervention by region in agricultural sectors around the world. Each summary also reviews recent changes in policies and estimates the possibility of further change, especially in the context of a liberalization at the end of the Uruguay Round.

United States

Frederick J. Nelson 2/

The principal instruments of recent U.S. government intervention in agriculture have been direct payments to agricultural producers, market price support schemes, and input subsidies. Total policy transfers to U.S. agricultural producers of 12 commodities, as measured by PSEs, averaged $26.7 billion per year during 1982-86, an amount equal to 24.6 percent of the gross value of production plus direct payments (table 8). This percentage increased from 17.3 percent in 1982 to 35.8 percent by 1986 as direct payments to grain producers increased $12.1 billion over 1982-86 to $14.2 billion in 1986.

Price support policies that raise the level of domestic prices relative to world prices accounted for 42 percent of total policy transfers during 1982-86. Taxpayers financed nearly 60 percent of total transfers. Half of the taxpayer amount was direct payments.

Agricultural Policy Objectives and Mechanisms

The United States is proposing major changes in agricultural policy in the Uruguay Round: a phase-out by all countries of all subsidies that encourage agricultural production or distort consumption or trade. U.S. agricultural policies have been major forces in the domestic and world markets. These policies are aimed at (1) protecting the income of farmers, (2) assuring that an adequate supply of food is available at reasonable prices, (3) promoting a safe and effective marketing system, (4) maintaining and/or expanding the U.S. share of commercial world exports, and (5) providing subsidized exports and food aid to needy countries.

Six program categories are used in this report to summarize and discuss U.S. policy transfer estimates and policy trends: direct payments to producers, market price support, input subsidies, marketing subsidies, long-term subsidies, other subsidies (table 8; and 50, pp. 141-9).

Total policy transfers for each commodity are defined as the sum of the transfers related to each of the six categories, for the crop year or marketing year unique to the specific commodity. Aggregations of policy transfers across commodities therefore may involve different time periods because marketing years differ.

Transfers related to specific programs are not always available for individual commodities. Direct payments data and market price support estimates are available by commodities, but transfers attributed to the FmHA, research and extension, and tax subsidies, for example, are usually available only as a total for all agricultural commodities and must be allocated to individual commodities. The amounts so allocated are rough estimates of the gross value of benefits related to the specified policy or program group.

When transfers are not available by commodity, the estimated transfer for each commodity is derived by distributing a share of the total to each commodity

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2/ Barbara Chattin provided a large amount of the original conceptual and quantitative work on the producer subsidy equivalents for the United States.

Table 8--Policy transfers to U.S. farmers (12 commodities), by category, marketing years 1982-86 1/

Item	1982	1983	1984	1985	1986	1982-86 average	Change, 1982-86
				Billion dollars			
Direct payments	2.0	11.7	4.2	7.1	14.2	7.8	12.1
Market price support	9.7	9.6	12.2	10.8	13.4	11.1	3.8
Input subsidies	2.4	2.6	2.4	3.5	4.4	3.1	1.9
Marketing subsidies	1.0	.6	.6	.6	.6	.7	-.4
Long-term subsidies	1.4	1.4	1.5	1.5	1.4	1.5	--
Other subsidies	2.6	2.4	2.4	2.6	2.9	2.6	.3
Total policy transfers	19.2	28.3	23.3	26.1	36.9	26.7	17.7
Value of production and payments	111.3	110.4	107.7	109.2	103.1	108.5	-8.2
				Percent			
Transfers as a percentage of value of receipts 2/	17.3	25.6	21.6	23.9	35.8	24.6	18.5

-- = Less than $0.05 billion. 1/ Includes estimates for wheat, feed grains, soybeans, rice, sugar, dairy, beef, pork, and poultry. 2/ Total policy transfers, expressed as a percentage of gross receipts including payments.

Source: ERS calculations.

based on the proportion of value of production, or of ton-miles shipped in the case of transportation subsidies. Such subsidies accounted for 23 percent of total U.S. subsidies received during 1982-86.

Recent Program Developments

The most significant changes in policy transfers to U.S. agriculture during the period, by program category, involved direct payments and market price support to farmers. The importance of these categories was influenced by changes in both the programs and general economic conditions. The United States returned to a period of excess supplies relative to market demand in the 1980s, partly due to the level of price and income support provided by the programs. Compared with the situation in the 1970s, U.S. exports decreased, government stocks and program costs increased, real net farm income declined significantly, interest rates increased, farm equity decreased, and many financially vulnerable farms experienced severe stress and had to make significant adjustments, including going out of business.

Direct Payments

Direct payments reached record levels during 1982-86. They were the principal income support mechanism for grain producers in terms of the above categories of support. Deficiency payments increased over the period examined, as reduced exports and excess supplies pushed market prices below fixed target price levels established by 1981 and 1985 farm legislation. In addition, large fixed-rate diversion payments were made to grain producers under the record large 1983 diversion program.

Direct payments reached an all-time high of $14.2 billion in 1986 as provisions of the Food Security Act of 1985 were implemented (17). Market conditions, reduced market price support levels (reduced loan rates), continued high target price levels, and the generic certificate program provided attractive incentives to make voluntary participation in the programs high, to bring market prices down, and to move deficiency payment rates up close or equal to their maximum levels.

Key features of the 1985 Act which influenced the level of 1986 payments included: (1) annually adjusted loan rates, (2) minimum target price levels predetermined independently of market conditions through 1990, (3) in-kind payments under the new generic certificate program, and (4) some payments not subject to payment limitations.

The Secretary of Agriculture set loan rates at the minimum allowable levels in 1986 in order to make U.S. products more competitive on world markets. This loan rate adjustment increased the potential for large deficiency payments, since the deficiency payment rate is equal to the difference between the preset target price and the higher of the loan rate or market price.

The lower 1986 loan rates allowed existing market forces and the generic certificate program to push market prices lower. Lower market prices made it profitable for farmers to forfeit loans that matured during 1986, increasing to $2.1 billion the estimate of the policy transfer related to loan forfeitures. Many of these loans originated in earlier years when the loan rates were higher than in 1986, so there was a powerful incentive to forfeit commodities rather than pay off the loan and sell in the open market. The PSE policy transfer due to loan forfeitures is equal to the difference between the loan rate on the original loan and the current market price, multiplied by the quantity forfeited. This forfeiture benefit is treated as a direct payment in the PSE accounts.

Market Price Support

Market price supports were the major source of PSE transfers for sugar and for dairy producers during 1982-86. There were relatively minor amounts of this source of PSE transfer for barley, beef, poultry, and wheat. All, or nearly all, of the estimated amount of market price support for each of these commodities was computed as the observed or estimated difference between domestic and foreign price (referred to as the PSE price gap) multiplied by the amount of domestic production. This corresponds to the method used for commodities in other countries such as the EC (49, pp. 11-13; 50, pp. 44-46).

Dairy and sugar support is provided primarily by import restrictions (tariffs and quotas) used in conjunction with high domestic price supports relative to world prices. Price supports are provided by government purchases of dairy

products, and by nonrecourse commodity loans for sugarcane and sugar beets. These purchase and loan programs are referred to as "stocking programs." Market price enhancement is provided to the grains sector through operation of stocking programs, supply controls (acreage reduction), and export programs (export enhancement). Poultry is also supported by export programs, and beef is supported through import restrictions and tariffs.

The Secretary is required, under the 1985 Act, to operate the sugar program at no cost to the Federal Government by preventing forfeitures of sugar under price support loan (17). Congress also encouraged the President to avoid adverse budgetary implications of the sugar program under the 1981 farm legislation (48). The program has been operated by a continual tightening of the import quota which decreased from 3.0 million short tons for calendar year 1984 to 1.7 million short tons for CY 1986.

Import restrictions have held the level of dairy product imports down to about 3 percent of manufactured dairy product consumption. The high level of dairy price support in real terms, coupled with decreases in the real cost of production in the 1980s, has encouraged the production of more dairy products than could be consumed at the price support level, leading to large government purchases to support prices. To deal with the surpluses, price supports were reduced beginning in 1983 and supply control measures were implemented in 1984-85 and 1986-87 (29).

Government programs for grain increase market prices above levels that would occur without these programs. These U.S. price increases are also reflected in markets around the world, because the United States provides an important share of the world's total supply of grain. As noted above, U.S. Government grain stocks and program costs increased in the early 1980s, U.S. exports declined, and this led to program changes such as reduced commodity loan rates, use of commodities to make in-kind direct payments, the implementation of the Export Enhancement Program (EEP), and large acreage reduction and acreage diversion programs.

Supply Control. Acreage control programs had an important role to play in the grains sector during 1982-86. They reduced the amount of production eligible for deficiency payments, reduced excess stock accumulation, and reduced payment rates when prices were raised. Acreage idled under acreage reduction programs increased from zero in 1980 and 1981 to 11 million acres in 1982, increased to a record level of 78 million acres in 1983, fell to 27 million acres in 1984, and rose to 69 million acres by 1987.

Under the Food Security Act of 1985, the amount of acreage reduction in a given year depends on rules set up by the law. Allowable acreage reduction percentages for wheat and for feed grains depend on the amount of carryover stocks. The acreage programs for cotton and rice must be operated to achieve specific target levels of carryover stocks.

Export Programs. Increasing U.S. competitiveness in world markets is the principal goal of export programs. Export objectives became very important in the United States during the 1980s as the total value of exports declined 40 percent, dropping from the record high level of $43.8 billion in FY 1981 to $26.1 billion in FY 1986. The United States has pursued export objectives in the 1980s in various ways, such as by reducing the level of market price support, and by implementing the EEP beginning in 1985 (39, 40).

Although domestic and world commodity prices are increased by all U.S. price-enhancing programs (including the export programs), countries obtaining imports from U.S. Government-subsidized export programs pay an effective price less than the market price for the commodities.

The existence of U.S. export subsidies makes the weighted average U.S. export price (for subsidized and nonsubsidized exports) less than the average U.S. producer price. This price difference, or "price gap," provides the basis for estimating PSE price enhancement transfers which equals the price gap times production, or $1.9 billion in total for wheat, poultry, and barley in 1986. The per-unit price gap used to calculate these PSE transfers for each commodity is equal to the total amount of export subsidies provided by the EEP program divided by total exports.

Other Programs

Most of the agricultural sector programs relate in one way or another to the principal goal of protecting farm income, but often more than one goal is served by a given program. The goal of having an adequate supply of food at reasonable prices can be pursued partly through the price and income support programs which subsidize production and reduce the financial risk of farming. The program provides longrun production incentives, partly offset by supply-restraining programs. When excess stocks accumulate in one period, as in the early 1980s, stocks may be available to compensate for production shortfalls, as in 1988. Program adjustments were made during 1982-86 to lower the level of price supports and to reduce the level of production and stocks that were judged to be too high.

The farmer-owned reserve (FOR) program and the other stocking programs also help to assure an adequate supply of grain by increasing average carryover stock levels. Such stocking policies can also support prices, especially if acreage reduction programs are routinely implemented whenever total stocks exceed certain trigger levels. FOR payments to farmers are counted as part of direct payments, while FOR interest subsidies, as well as interest subsidies on regular price support loans, are treated as input subsidies in the PSE framework. Under the 1985 Act, the size of the FOR and therefore the amount of the FOR subsidy are constrained by minimum and maximum quantities.

Other programs that can contribute to supply and price assurance goals are those with transfers included in the PSE "long-term" category, those that subsidize research, extension, pest and disease control, and conservation and land improvements. The amount of PSE transfers is the amount of government outlays by various agencies that operate the programs. These subsidies help reduce the cost of producing and marketing U.S. farm products.

The 1985 Act also established a long-term conservation reserve program (CRP), which will place 45 million acres of highly-erodible land in conserving uses by 1990. Policy transfers due to the CRP are excluded by definition from the PSE because payments to farmers under this program permanently reduce agricultural production. (See methodology section.)

A safe, effective marketing system is facilitated by programs that subsidize the production of market information and economic indicators, inspection programs that help guarantee healthful foods, a program of recognized standards, and transportation subsidies. Policy transfers for these programs are based on government agency outlays, and they are included in the PSE marketing category.

Amount of Policy Transfers to Producers

Policy transfers during 1982-86 averaged $26.7 billion per year and were equal to 24.6 percent of the total value of gross receipts (value of production and payments) of the commodities covered. The estimates are for 12 commodities which accounted for 71 percent of total receipts for all farm products during this period (tables 8, 9, 10, 11).

Two categories of transfers accounted for a large share of the total transfer during 1982-86: direct payments (29 percent of the total) and market price supports (42 percent). Total policy transfers increased from $19.2 billion to $36.9 billion (a 92-percent rise) over the period. Direct payments were responsible for two-thirds of this rise, while market price supports accounted for only a fifth of the rise. This reflects the change in program philosophy under the 1985 Act, in which price support loan rates were reduced to make U.S. products more competitive in world markets, along with only gradual reduction of target prices to protect farmer's incomes. Direct payments, therefore, became relatively more important in 1986 compared to other sources of support (fig. 15).

Table 9--Policy transfers to U.S. farmers, by commodity, marketing years, 1982-86

Item	1982	1983	1984	1985	1986	1982-86 average	Change, 1982-86
				Billion dollars			
Dairy	9.0	8.3	11.0	10.3	10.4	9.8	1.4
Market price support	8.2	8.1	10.5	8.9	9.6	9.1	1.4
Corn	3.0	8.7	3.4	4.7	10.1	6.0	7.1
Direct payment	.8	7.2	1.8	2.7	8.0	4.1	7.2
Wheat	1.8	4.6	3.1	3.8	5.8	3.8	4.0
Direct payment	.7	3.3	2.1	2.5	4.4	2.6	3.7
Beef and veal	1.6	1.7	1.7	2.0	2.4	1.9	.8
Sugar	1.1	1.1	1.3	1.1	1.4	1.2	.3
Soybeans	1.0	.9	.7	1.0	1.2	1.0	.3
Sorghum	.4	1.4	.4	.7	1.1	.8	.7
Rice	.4	.7	.5	.9	1.1	.7	.7
Poultry	.3	.3	.4	.5	1.5	.6	1.2
Pork	.5	.5	.5	.6	.7	.6	.2
Barley	.2	.2	.2	.4	1.0	.4	.9
Oats	--	.1	--	.1	.1	.1	--
Total transfers	19.2	28.3	23.3	26.1	36.9	26.7	17.7

-- = Less than $0.05 billion.
Source: ERS calculations.

Table 10--Policy transfers as a percentage of value of gross cash receipts, marketing years, 1982-86

Commodity	1982	1983	1984	1985	1986	1982-86 average	Change, 1982-86
				Percent			
Sugar	70.4	71.3	86.8	75.3	82.7	77.4	12.3
Dairy	48.4	44.9	63.4	54.8	58.9	53.9	10.5
Rice	23.8	46.4	31.9	52.2	71.7	45.2	47.9
Wheat	16.8	38.1	28.5	37.9	63.0	36.5	46.2
Sorghum	18.1	52.9	19.5	22.5	49.2	31.4	31.1
Barley	13.2	14.2	13.7	27.4	76.4	28.8	63.2
Corn	12.9	40.8	15.5	19.7	49.5	27.1	36.6
12 commodities 1/	17.3	25.6	21.6	23.9	35.8	24.6	18.5

1/ Other commodities, shown in table 9, had percentages less than 10 percent as an average for 1982-86.

Source: ERS calculations.

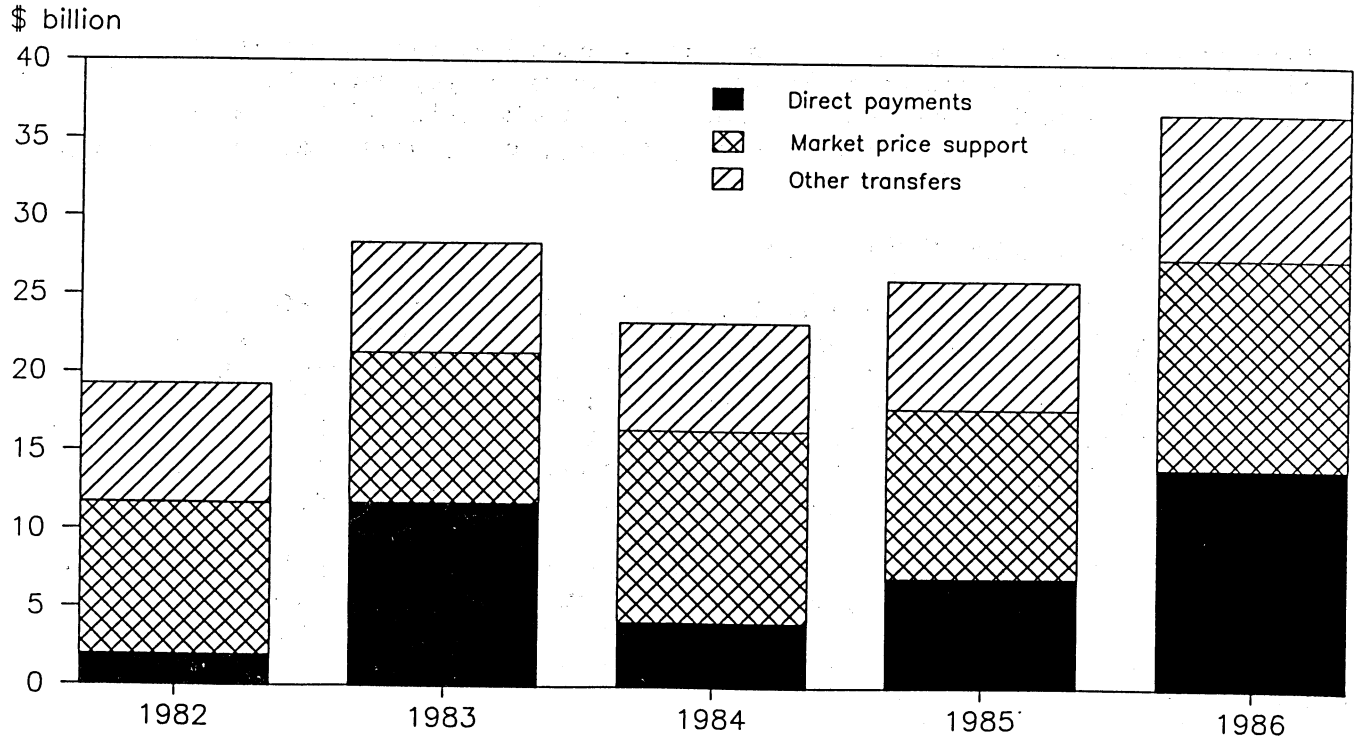
Table 11--Direct payments, market price support, and other transfers as a percentage of gross receipts, 1982-86 average for marketing years

Commodity	Direct payments	Market price support	Other transfers	Total transfers
		Percent		
Sugar	0	71	6	77
Dairy	-1	50	5	54
Rice	39	0	6	45
Wheat	25	1	10	36
Sorghum	22	0	9	31
Barley	13	7	9	29
Corn	19	0	8	27
Beef	0	3	6	9
Soybeans	0	0	8	8
Poultry	0	2	6	8
Oats	2	0	6	8
Pork	0	0	6	6
12 commodities	7	10	8	25

Source: ERS calculations.

Figure 15

Policy transfers to U.S. farmers



Payment increases between 1982 and 1986 reflect the effects of reduced market prices on the deficiency payment rate per bushel, increased participation in the programs, and several provisions of the 1985 Act including the benefits of marketing loans and increased forfeitures in 1985 and 1986. Farmer benefits arising from the loan rate/market price difference at the time of loan forfeiture or under the marketing loan provisions are treated as a direct payment. Payments rose by $7 billion from 1985 to 1986 due to implementation of the 1985 Act. The extraordinarily large diversion payments for the 1983 PIK temporarily increased payments in 1983.

Increases in market price support subsidies occurred because of increases in price-enhancing transfers for grain, and because of continued decreases in the level of world dairy prices relative to U.S. dairy prices which increased the domestic/foreign dairy price gap.

The largest transfers, in absolute terms, went to dairy, corn, wheat, and beef over 1982-86. These commodities accounted for about 80 percent of total transfers and for three-fourths of the 1982-86 change (table 9). The absolute amount of transfers reflects the quantity of production and the subsidy per ton produced. Among these four commodities, the amount of transfers per ton was largest for beef, for example, but its level of production was lowest,

so its absolute amount of total policy transfer was also lower than that for the other three commodities.

Over 1982-86, commodities with high PSEs, measured as the amount of the transfer as a percentage of total value of receipts (payments plus value of production) included sugar, dairy, and rice. Commodities with PSEs of at least 45 percent in 1986 included sugar, barley, rice, wheat, dairy, corn, and sorghum (fig. 16 and 17).

Transfers for Specific Commodities

Dairy. Transfers to the dairy sector averaged $9.8 billion during 1982-86, and were equal to 54 percent of the value of receipts. Dairy transfers for 1984 were the largest during the period studied. Support during 1982-86 was nearly all due to the price protection provided by domestic price support programs working in conjunction with import quotas and tariffs ($8.8 billion). Dairy price support accounted for most of the total market price support estimate for all the commodities examined (tables 8, 9, 10, and 11).

Dairy market price support was estimated from world/domestic price differences (price gaps) for butter, cheese, and nonfat dry milk. New Zealand prices were assumed to be representative of world prices. In 1986, the world/domestic price differences for the United States equaled 47-60 percent of the domestic prices for the three commodities.

The dairy price support subsidy increased $1.4 billion between 1982 and 1986 while other sources of dairy subsidies were constant. This occurred while average domestic prices were declining and reflects the effect that world surpluses and subsidized dairy exports were having on the world markets and the U.S. domestic/world price differences. In addition to increasing price differentials, U.S. production also increased.

Corn. Annual transfers to the corn sector averaged $6 billion for 1982-86, and were 27 percent of the value of receipts. Transfers increased $7.1 billion from 1982 to 1986 rising to $10.1 billion in 1986, or 50 percent of total receipts. However, the amount of increase varied annually. There was a $5.7-billion increase in total corn transfers from 1982 to 1983 as the PIK acreage diversion program was implemented. Transfers decreased nearly to the 1982 level for 1984, and then there were two successive increases totalling $6.7 billion from 1984 through 1986 as loan rates and market prices declined.

About $4 billion of the 1986 policy transfer for corn was due to the reduction in loan rates and the use of certificates to make payments under the 1985 Act. These program actions kept prices low and deficiency payments and loan forfeitures high.

In 1985 and 1986, market prices for corn were below $2 per bushel, the rate of participation increased relative to the prior year, and the deficiency payment rate per bushel increased by 1986 to $1.11, the new maximum level under the 1985 Act. There was also a $1.2-billion increase in loan forfeiture benefits from 1985 to 1986, as market prices stayed lower than the loan rates on old maturing loans.

The change in total transfers to corn over the 1982-86 period accounted for 40 percent of the change for all 12 commodities examined and reflects the shift in the United States toward increased reliance on direct payments, reduced

Figure 16

U.S. policy transfers as percentage of gross receipts, 1982–86 average

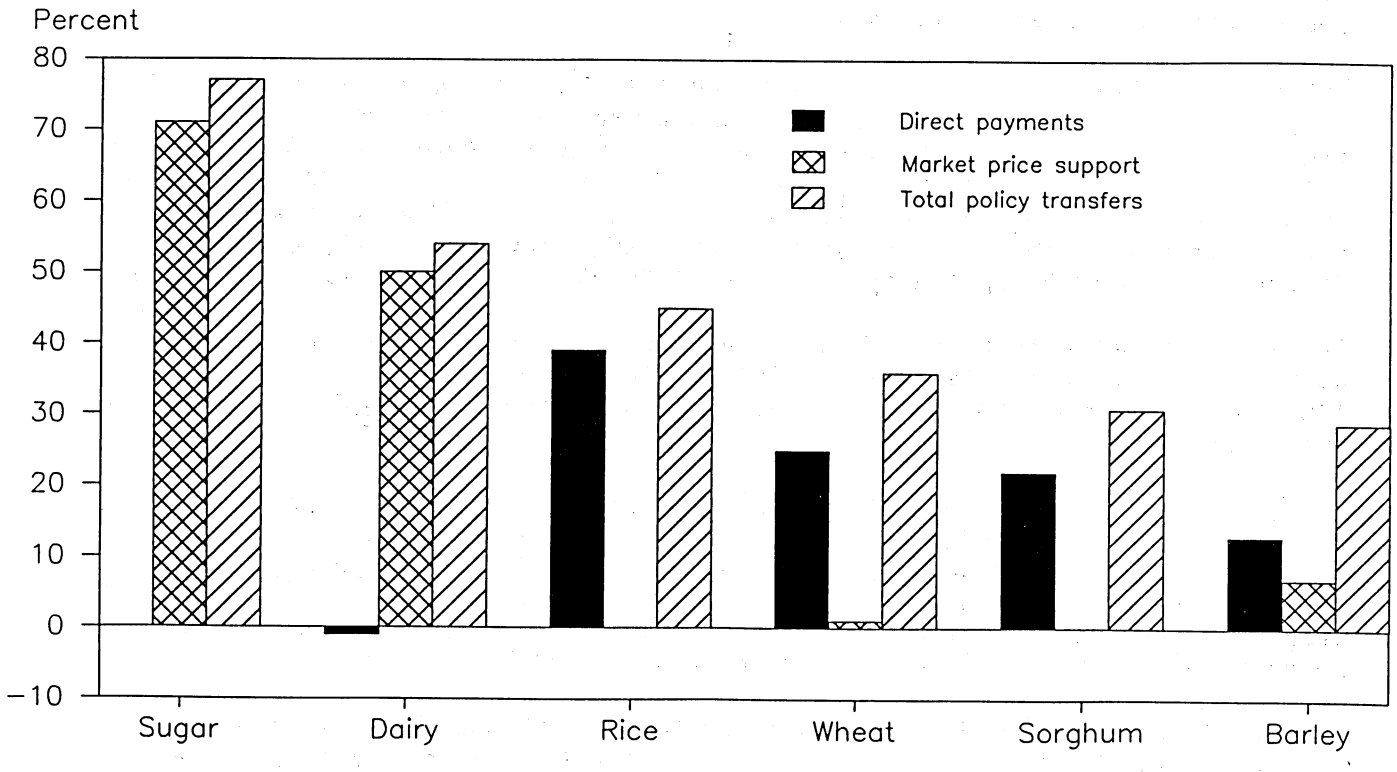
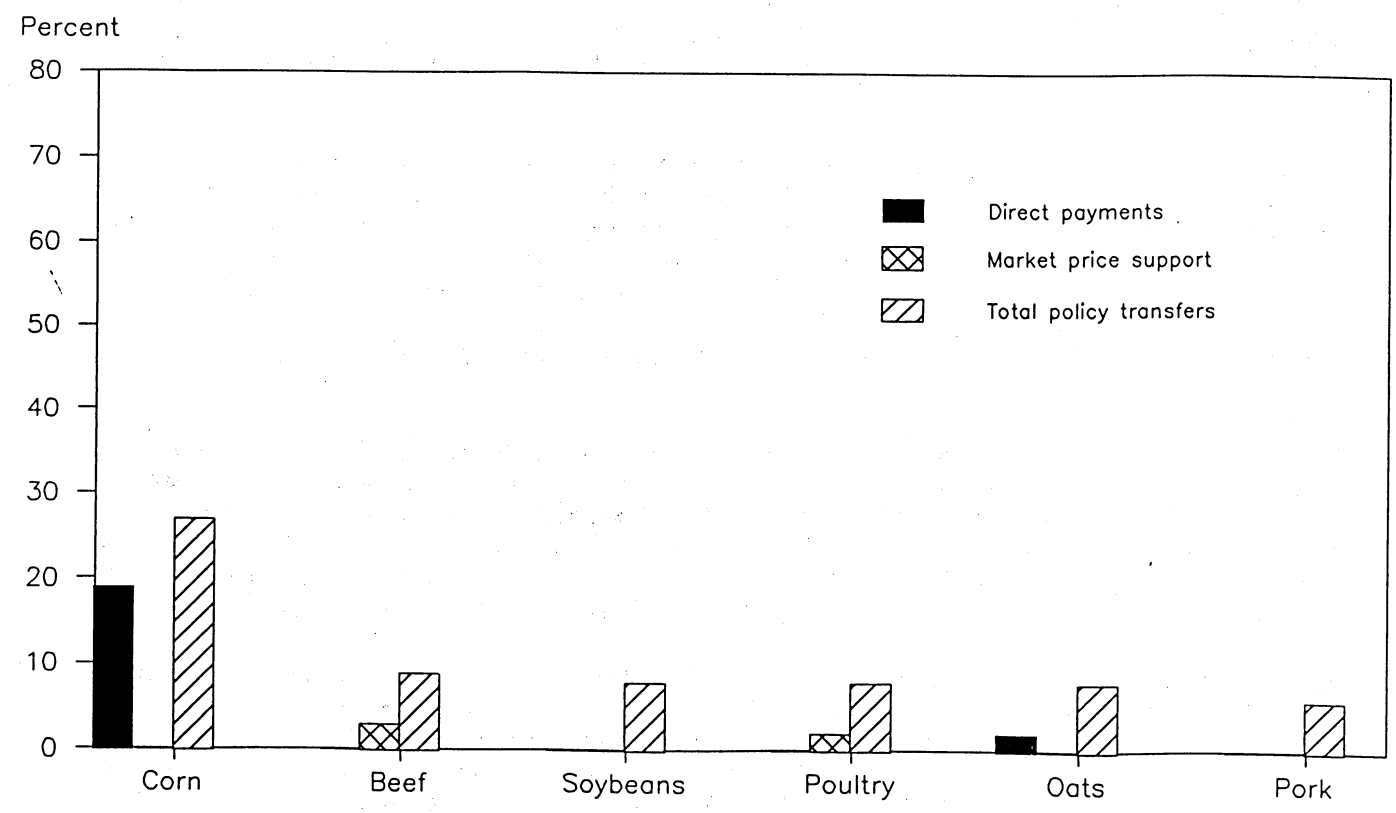


Figure 17

U.S. policy transfers as percentage of gross receipts, 1982–86 average



levels of support for price through high U.S commodity loan rates, and increased use of generic certificates to make payments to farmers. Direct payments accounted for two-thirds of corn transfers in 1982-86 and for four-fifths of transfers in 1986.

Wheat. For 1982-86, transfers to the wheat sector averaged $3.8 billion, or 36 percent of the value of receipts. Wheat transfers increased by $4 billion, reaching $5.8 billion in 1986, or 63 percent of gross receipts. About $1.1 billion of the 1986 wheat policy transfer was attributable to additional loan rate reductions made under provisions of the 1985 Act. Transfers rose $2.8 billion from 1982 to 1983, the year of the large PIK diversion program. Transfers rose $2.0 billion from 1985 to 1986 as the 1985 Act was implemented.

Prices for wheat were below or near the loan rate for 1982-85, and slightly above it in 1986. The maximum possible deficiency payment rate was paid in 1985 and 1986, reaching $1.98 in 1986 as loan rates were pushed down to $2.40 under the 1985 Act.

The 1982-86 change in the wheat sector support accounted for 23 percent of the change for all 12 commodities, and, as with corn, reflects the increased reliance on direct payments and generic certificates, and reduced reliance on high loan rates and high market prices. More than 70 percent of wheat transfers were direct payments in 1983 and in 1986, compared with about 67 percent in 1984 and 1985 and only 40 percent in 1982.

Sugar. Annual transfers to the sugar sector ranged from $1.1 billion to $1.4 billion during 1982-86 and represented 77 percent of sugar gross receipts.

The percentage of receipts accounted for by sugar transfers ranged from 70 percent in 1982 to 87 percent in 1984, the latter being a year when world market prices were unusually low and U.S. production was on an upward growth trend. The U.S. price has been very stable, primarily because of the price support program. The loan level was $0.17 to $0.18 per pound for raw sugar throughout the period.

Ninety percent of the sugar subsidy was due to market price support. Domestic/world price differences (adjusted for transportation) ranged from 65 percent of domestic price in 1982 to 82 percent in 1984. Imports were reduced from 3 million short tons in 1982 to 2.3 million short tons in 1986, while U.S. production has increased from 5.9 million short tons in 1982 to 6.3 million short tons in 1986. With the recent levels of price support and import quotas, domestic production is being substituted for imports as a source of supply.

Beef. Transfers to the beef and veal sector amounted to $1.9 billion during 1982-86, equaling 9 percent of the value of receipts. The largest subsidy category was for market price support, due largely to the use of import tariffs, which represented 29 percent of total support. Another 29 percent of support came from "other" subsidies, which were allocated to beef based on the relative share of beef in the total value of agricultural production.

Most of the variation in support for beef came from changes in FmHA interest subsidies and from the incidence of some beef purchases by the government starting in 1985 as the dairy herd buy-out program began to affect the market for beef. Dairy producers were offered compensation in return for agreeing to sell all their dairy cows and to cease production. There was no PSE transfer

5elated to this sale as it was aimed at permanent reduction in dairy production rather than shortrun price or income support. Because of the downward pressure that this put on beef prices, the government made beef purchases of 400 million pounds to stabilize the market. The beef purchase was included in the beef policy transfer estimate, but not in the dairy transfer, since its unique effect was on beef prices rather than on dairy prices.

The level of support related to import tariffs for beef was very stable during 1982-86. This was measured as a constant tariff rate of $0.02 per pound multiplied by production.

Implications for Taxpayers and Consumers

Taxpayers financed $15.6 billion in annual transfers, or nearly 60 percent of the total transfer to producers of the 12 U.S. commodities in this study during 1982-86. Consumers paid an added $11.1 billion per year to support farmers through higher market prices, or 11 percent of total value of production for the 12 commodities (table 12).

These estimates of taxpayer contributions equal the total transfer to producers less the amount of transfer due to market price support. Another measure of program cost is net expenditures of the agency that administers the price support programs--the Commodity Credit Corporation (CCC)--which averaged $18.3 billion for FY 1983-87, the period most closely associated with crop years 1982-86. Some of the CCC cost total is for commodities not covered by the PSE estimates. The average annual CCC costs for the same set of commodities as used in the PSE measurement was $14 billion for FY 1983-87.

Table 12--Implications for U.S.taxpayers, consumers, and producers

Measures of intervention and cost	Units	Amount for 1982-86	
		Annual average	Change, 1982-86
Transfers to producers: 1/			
Amount	Billion dollars	26.7	17.7
Percent of receipts	Percent	25.0	19.0
Consumer costs based on the PSE (market price support):			
Amount 1/	Billion dollars	11.1	3.7
Percent of value of production	Percent	11.0	6.0
Taxpayer costs:			
Net CCC expenditures--			
Total 2/	Billion dollars	18.3	3.5
Specified commodity 3/	Billion dollars	14.0	4.6
PSE, excluding market price support 1/	Billion dollars	15.6	14.0

1/ Source is table 8. 2/ For all commodity programs administered by the CCC, including cotton, tobacco, honey, and peanuts, as well as the commodities covered in this study. 3/ Total expenditures of the CCC for the programs for wheat, rice, feed grains, soybeans, dairy, and sugar.

There are also some conceptual differences in CCC- and PSE-based cost estimates. Unlike the PSE-based estimate, for example, the total CCC cost figure includes outlays for loans made less loans repaid in each year. The PSE concept excludes the loan outlays, but measures loan-related subsidies as the interest rate subsidy on the loans outstanding during the period studied, plus the loan forfeiture benefits discussed earlier in relation to direct payments. The PSE concept also includes some outlays for programs not related to specific commodities, such as research and extension, also discussed earlier. The PSE-based measure of costs increased $8.2 billion from 1985 to 1986, while the net CCC expenditure decreased $3.4 billion.

The U.S. Proposal in the MTN

The extent and nature of government intervention in agriculture and the rest of the world would change radically if recent proposals by major trading nations were to be implemented. The data in this report indicate where some of the most significant changes would have to be made under some of these proposals, especially in the case of the U.S. proposal.

The U.S. delegation to GATT presented a proposal for agricultural trade liberalization on July 6, 1987. The U.S. proposal calls for the following steps and special considerations:

(1) Eliminating all subsidies directly or indirectly affecting trade over a 10-year period.

(2) Eliminating all import barriers over a 10-year period.

(3) Freezing and gradually phasing down to zero the quantity of subsidized exports.

(4) Harmonizing sanitary and phytosanitary regulations and standards which are sometimes used to restrict imports.

(5) Developing a yardstick, or quantitative index, to measure the amount of aggregate support countries give to their farmers. Such an aggregate measure of support (AMS) could be used to monitor progress in the phasing out of subsidies over a 10-year period.

(6) Special consideration for certain policies. All policies would be included in the AMS and the phase out except those that could be determined to be nondistorting (i.e., decoupled) in regard to the effect on production, consumption, and trade. Bona fide food aid would also be allowed to continue.

(7) Special consideration for LDCs. According to U.S. proposals made in the spring of 1988, less-developed countries would be allowed to continue certain subsidies and trade-distorting activities for a period of time.

Special Consideration for LDCs. The special considerations for LDCs would involve noncommodity-specific subsidies for long-term agricultural development, limited tariffs on agricultural commodities, extended periods of time to complete the transition to a fully-liberalized situation, and accelerated liberalization by all countries for commodities of special interest to LDCs.

The noncommodity-specific subsidies that would be allowed are those that would be needed for long-term development (research and extension, information services, and infrastructure and improvement projects). These subsidies would have to be eliminated as the country's agricultural sector developed.

Developing countries would commit to phased elimination of all nontariff measures, but would be allowed to continue tariffs in some cases if they are reduced to moderate levels and bound in the GATT through a negotiation process. The level of these tariffs would then be reduced in line with the rate of progress in the development of the general economy.

The timing for the phase-in of liberalization could be varied to aid LDCs. LDCs might be given more than the proposed 10 years to eliminate all subsidies. The rate of liberalization may be accelerated worldwide for commodities of special interest to consistent with the U.S. proposal on tropical products. The details of these steps would be negotiated.

Decoupled Support. Direct income or other payments unrelated to production or marketing have been labeled decoupled payments and would be allowed to continue for some, as yet, unspecified period of time. These payments would allow countries to provide transitional farm income support during the phase-out period and would provide a safety net to producers against natural disasters or other extraordinary circumstances.

Payments are "unrelated to production and marketing" only if they do not affect farmers' production, investment, and marketing decisions. Decoupled payments must be independent of the current and future level of farmers' production and marketings, input use, and commodity prices. Such payments would have to be tied to historical production, to the status of being a farmer, or to some other factor not related to current or future production or prices.

With complete decoupling, farmers would make decisions about crop mix and scale of operation based on market signals, and any policy transfers would provide no incentive to produce beyond ordinary market demands. In practice, decoupled payments may still affect the size structure of agriculture and supply of farm products by influencing the rate of entry and exit, especially if eligibility for payments requires continuation of agricultural operations. If payments are eventually phased out, however, the exit issue would disappear, and the entry issue may be eliminated by tying payments to a past history of production.

Western Europe

Mary Anne Normile 3/

Agriculture in Western Europe is dominated by the 12 countries that make up the European Economic Community (EC-12): Belgium, Denmark, France, West Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, and

3/ Marshall Cohen, Suzanne Dash, Gene Hasha, Dale Leuck, Peter Liapis, and Mark Newman contributed material for this section.

the United Kingdom. Intervention in the agricultural sector occurs at the Community level through the Common Agricultural Policy (CAP) and, to a lesser degree, at the national level. The governments of other Western Europe countries---Austria, Finland, Norway, Sweden, and Switzerland--also intervene in their agricultural sectors to promote domestic objectives related to sectoral development and food self-sufficiency.

Agricultural Policy Objectives and Mechanisms

The EC's agricultural policy is embodied in the CAP, a collection of policy instruments designed to promote domestic agriculture and maintain farm income. Three basic principles guide the CAP: (1) free flow of agricultural commodities within the EC, (2) Community preference (EC products have priority in the internal market over imports), and (3) common financing of agricultural programs. Within these guidelines, the broad policy objectives include increasing agricultural productivity and promoting agricultural development, ensuring a fair standard of living for agricultural producers, stabilizing markets, and assuring availability of supplies at reasonable prices to consumers. These objectives are achieved primarily through a system of supported prices that are set to realize farm income targets.

The principal mechanisms for implementing price supports are:

(1) Protection at the border through minimum import prices (threshold prices) and variable import levies (taxes on imports equal to the difference between internal target prices and world market prices).

(2) Internal price support through intervention purchases (government purchases at guaranteed prices) and storage aids.

(3) Disposal of surplus production through export subsidies (export restitutions) and domestic consumption subsidies.

The CAP system of variable import levies, internal price support through intervention, and subsidized disposal of surpluses is provided for grains, sugar, dairy products, beef, and sheepmeat. Pork and poultry receive no direct price support through intervention, but benefit from import levies and export subsidies. Oilseed prices are supported through subsidies paid to processors. Producers of durum wheat, beef, and sheepmeat also receive direct payments.

Production controls (quotas) are used only for sugar and milk. Sugar produced up to the level of the quota receives a support price; over-quota production is sold on the world market at the lower market price. Dairy quotas were introduced in 1985 in an attempt to redress the supply/demand imbalance in that sector. A co-responsibility levy is charged to producers to defray the costs of market expansion, and an additional levy is charged on milk produced in excess of the production quota. Growing commodity surpluses and escalating budget costs in the last decade have led to a growing acceptance of producer co-responsibility, whereby producers of surplus commodities bear some of the cost of surplus disposal.

Effects of the CAP

The CAP has achieved many of its objectives with respect to producers. High support prices have produced domestic market stability, enhanced food

security, and fostered increased agricultural productivity. High prices have also stimulated production, resulting in expensive surpluses and large-scale subsidized exports. As a result, the EC has evolved from a position of a net importer to that of a net exporter of many agricultural commodities. High prices maintained farm incomes in an acceptable range until the mid-1970s, when farm income performance began to lag that in the nonfarm sector. Since then, farmers' returns have remained far below nonfarm returns. In 1985, returns fell to the levels of the late 1970s.

Consumers pay a large share of the cost of farm support programs in the form of food prices that are considerably above those in world markets. But taxpayers now bear an increasingly large share of this cost, as outlays from the agricultural budget are required to finance surplus disposal.

Policy Changes, 1985-Present

Many agricultural policy developments during 1985 and 1986 were driven by the twin burdens of disposal of surplus agricultural production and high budgetary costs of agricultural support programs. The budget problem reached crisis proportions in 1986 when expenditures for agricultural support rose above anticipated levels, exceeding available funding and resulting in revenue shortfalls. Pressure rose to adjust the CAP to reduce outlays, but was moderated by a desire on the part of the more powerful EC member countries to maintain farm income levels in light of declines in world prices for most agricultural products. To resolve the crisis, the Commission adopted more restrictive pricing policies and instituted measures to reduce production of surplus commodities and to stabilize or reduce outlays on commodities where expenditures were growing rapidly. Among the policy actions taken since 1985 are the following:

(1) EC enlargement. A noteworthy event in EC agricultural policy in this period was the 1986 enlargement of the EC-10 to include Spain and Portugal. EC agricultural policy has been oriented to northern European production, characterized principally by production of grains and livestock. The addition of Spain and Portugal, with their Mediterranean climates and production, will provide more political leverage to Italy and Greece in their efforts to gain a larger share of EC agricultural outlays for Mediteranean products. However, Spanish and Portuguese agricultural production and policies will not be fully integrated with those of the Community until after transition periods of 4 to 10 years.

(2) Restrictive pricing policy and increased reliance on stabilizers. In 1986, the Community instituted a restrictive price policy by freezing policy prices for soft wheat, corn, rice, sugar, milk, beef, pork, and sheepmeat and reducing durum and barley prices. (However, prices received by producers rose for nearly all products when converted into local currencies.) These measures were undertaken in an attempt to reduce production of commodities where markets are burdened by oversupply.

(3) Greater use of producer co-responsibility. A volume-related producer tax on marketed production was introduced for cereals in 1986 which should partially offset higher producer prices in local currencies. Another form of a co-responsibility tax was also introduced for oilseeds, where target prices are reduced if certain production levels are exceeded.

(4) Dairy quotas. In 1985, a delivery quota system was introduced for milk. The limit on milk collected was set at 98 million metric tons, a level below production at that time but still in excess of domestic requirements. Quotas are enforced by a producer levy on over-quota production equal to 75-100 percent of the milk target price. The quota level was further reduced in 1986. These actions led to a decline in total milk production in 1987.

Other measures were introduced to make intervention buying less automatic, such as a reduction of the share of storage costs reimbursed by the Community to member countries. Also, special outlays were allocated to reduce intervention stocks of beef and butter.

Since 1986, the most significant policy development has been the agreement in early 1988 on a policy reform package that provides for increased funding for the EC budget, but limits the growth of the agricultural budget. New pricing arrangements that make increased use of stabilizers and a paid set-aside program for grains were also adopted. The new financing arrangement, which converts the revenue formula from a share of the value-added tax (VAT) to a percentage of gross domestic product (GDP), will make more money available for the EC budget, of which the CAP accounts for about 70 percent. The agreement places a $33.8-billion (27.5 billion ECU) ceiling on 1988 spending on agricultural price supports, and limits growth of the agricultural budget to 74 percent of annual GNP growth. Grain and oilseed stabilizers reduce support prices if production exceeds a volume ceiling. The reduction is limited to 3 percent of the support price for grains, with no limit for oilseeds.

The budget agreement also provided for a paid land set-aside program to help reduce production and support costs for grains. The program would be funded in part by national governments and in part by the CAP, with the amount of the per-acre payment varying by country. Producer participation will depend on how attractive the individual countries make their programs. The budget reform package was approved by the European Parliament in June and will be implemented in marketing year 1988/89.

The 1988 policy reforms represent a continuation of the EC's policy of restricting price increases and adopting measures aimed at slowing the growth of surplus production and budget costs. The effects of these policies will depend on the national governments' providing adequate funding for the set-aside program, and the Council's willingness to hold the line on price increases and production ceilings. By providing more resources for funding of EC activities, however, the new financing arrangement will alleviate an important source of pressure for reform of EC agricultural support programs.

EC-10 PSEs

PSEs for the major commodities of the EC-10 are shown in table 13 and figures 18 and 19. The commodities for which PSEs were estimated represent about 70 percent of the value of all agricultural production in the Community. Spain and Portugal are not included in the 1986 PSE estimates because they are still in the transition period and not yet fully integrated into the CAP.

The value of EC price support programs to producers is estimated by a price gap, which is the difference between domestic producer prices and world prices. Some producer support is also provided by direct payments to producers, but these are small compared with price support. PSE estimates are

highly sensitive to assumptions regarding the level of world market prices because of the way the PSE is calculated. The ECU-dollar exchange rate has also had an important effect on PSEs. The U.S. dollar depreciated against the ECU beginning in 1985 and continued to decline through early 1988. As a result, world prices for commodities denominated in U.S. dollars fell when expressed in ECUs, causing the EC-world price gap to grow.

The aggregate PSE level rose over the period under review, from 29 percent in 1982 to 49.8 in 1986. PSE estimates for the most recent years showed that support levels were positive for all commodities and high for most. Compared with the 1984 estimates, support to EC producers increased in 1985 and 1986 for nearly all commodities studied. Support for many EC commodities had been at its lowest in 1984 due in large part to the effect of exchange rates. The dollar's high value during the 1984/85 marketing year made EC agricultural exports more competitive with U.S. exports, and resulted in lower EC outlays for export refunds. Large PSE increases (of approximately 20 percentage points) were estimated for grains (wheat, barley, corn, and rice), rapeseed, and milk from 1984 to 1986. Support continued to rise in 1986 despite actions undertaken to implement stabilizers and freeze some support prices. Continued declines in world commodity prices increased the gap between the domestic and world prices, and the depreciating dollar resulted in lower world prices in ECUs.

Table 13--EC-10 PSEs

Commodity	1982	1983	1984	1985	1986	1982-86 ave.
			Percent			
Wheat (common)	27.0	9.9	3.8	31.1	58.8	25.0
Durum wheat	35.7	32.2	36.3	47.5	52.4	38.4
Barley	3.5	21.7	1.6	9.7	39.2	14.2
Corn	19.6	.2	5.9	36.2	62.1	24.8
Rice	29.5	23.4	43.3	58.6	73.3	46.6
Soybeans	50.8	13.7	42.7	66.4	43.4	46.9
Rapeseed	49.7	36.7	16.6	52.5	67.5	44.6
Sugar	43.2	24.3	56.0	52.3	49.2	45.4
Milk	34.2	34.0	40.3	43.8	65.5	44.1
Beef and veal	38.0	42.5	49.4	55.6	36.5	44.6
Pigmeat	11.7	15.2	7.7	13.7	27.1	15.1
Poultrymeat	21.6	32.5	25.6	29.5	33.6	28.7
Sheepmeat	39.4	42.8	43.7	39.7	59.5	45.5
Aggregate	29.0	29.5	30.4	38.3	49.8	35.4

Source: ERS calculations.

Figure 18

EC-10: PSEs (1982-86 average)

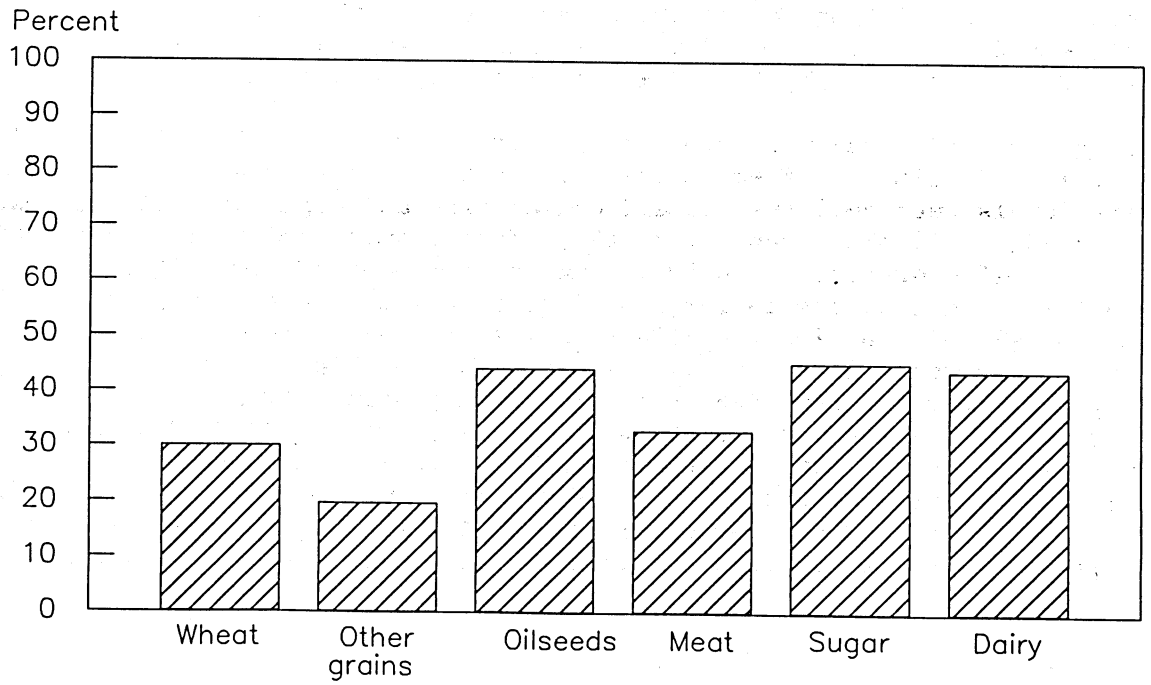
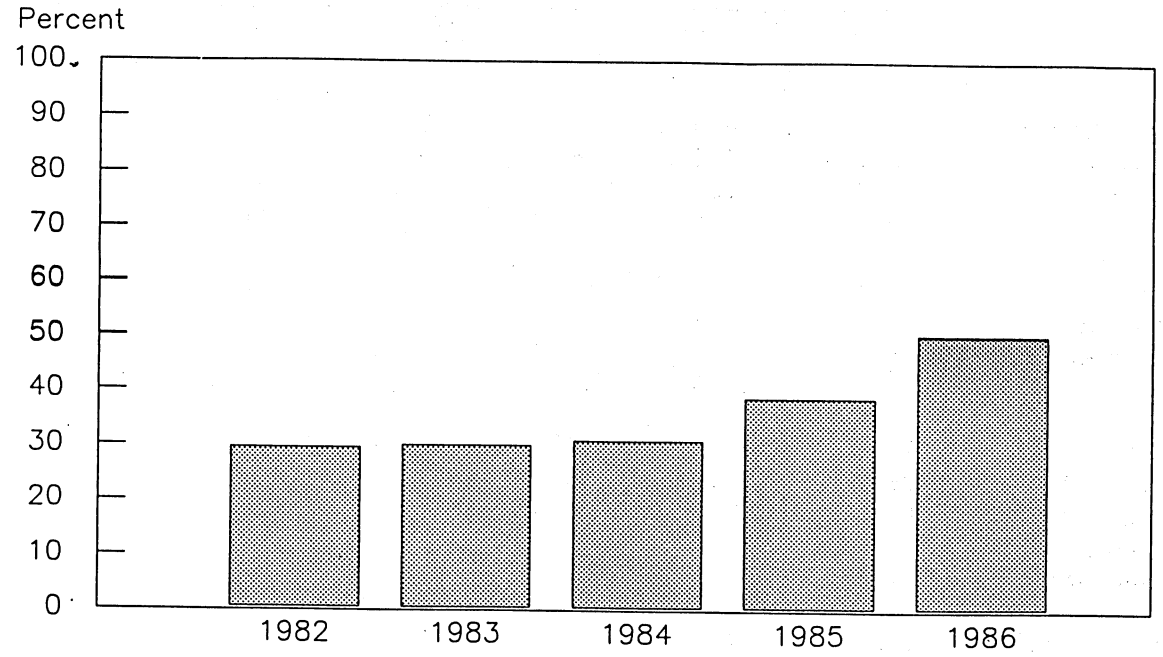


Figure 19

EC-10: Aggregate PSEs



National policies

Member countries have a great deal of influence in the policy and pricing decisions taken at the Community level through representation in the European Commission and the Council of Ministers, as well as in the European Parliament where budget and policy actions are approved by member countries. Because of the pervasiveness of the CAP in nearly every aspect of agricultural policy within the EC, there is limited scope for individual member countries to carry out independent agricultural policy. In addition, the Treaty of Rome, which established the EC in 1957, set forth rules on assistance to agriculture that national governments may provide. Nearly all countries augment to some degree the policy measures of the CAP.

Most national policies target assistance to such areas as structural adjustment, rural or agricultural development, enhanced agricultural productivity, maintenance of the family farm, encouragement of value-added activity, development of products in which the country has a comparative advantage, and environmental protection. No input subsidies are allowed, with the exception of subsidized credit for special development programs.

The policy instruments used by individual countries to realize these objectives are equally varied, but limited to mainly nonprice, indirect measures. These include provision of credit (sometimes at subsidized rates or other favorable terms), tax concessions, measures to promote modernization, export promotion and market development activities, government investment in infrastructure, aids to private agriculture-related investment, and social security. These mechanisms tend to benefit producers indirectly rather than provide direct income or price assistance.

Costs of national policies are born largely by taxpayers, rather than consumers, because these policies cannot operate through the price mechanism, which is the purview of the CAP. National policies are not included in the PSE measures for the EC countries because of the lack of reliable data for recent years. In 1980, the last year for which reliable estimates are available, expenditures by national governments on agriculture were 9.4 billion ECU, compared with about 12 billion ECU at the EC level. Since then, the rapid growth of EC expenditures on agriculture has eclipsed outlays by national governments.

Prospects for Liberalization

Because the EC is a customs union with a common external tariff, responsibility for trade negotiations resides at the Community level. The EC has submitted a proposal for agricultural negotiations in the current MTN. The proposal focuses on the imbalance between supply and demand and proposes short-term measures to stabilize the market, reflecting the EC's position that a better world supply/demand balance must be achieved before import barriers can be reduced.

The EC proposes a two-stage negotiating process. In the first stage, countries would agree to a series of short-term measures to restore supply/demand balance. These measures would include price discipline for cereals with "corresponding arrangements" for cereal substitutes (generally interpreted as measures to reduce EC imports of cereal substitutes), actions to stabilize the world sugar market, and extension of the International Dairy Agreement's disciplines to nonmember exporting countries. Other measures

would consist of reducing support to avoid exacerbating existing market imbalances; these measures would have to be reciprocal and equivalent in scope among countries, would give credit for actions already taken by countries to control production, and would focus on cereals, rice, sugar, oilseeds, dairy, and beef/veal.

In the second stage, the EC proposes: (1) a further, "significant" reduction of support and a readjustment of external protection by replacing distorting support with supply-neutral aid to farmers; (2) strengthening GATT rules and disciplines on subsidies, demand-enhancing measures, and market access in the presence of state trading and marketing boards; and (3) harmonizing animal and plant health regulations. Their position on subsidy reduction is that world markets must be stabilized before maximum levels of support and protection can be negotiated.

The proposal states that the EC would accept the use of an aggregate measure to measure support, such as the PSE, if it were adjusted to account for production controls and world price and currency fluctuations, and included only policy measures having a significant trade impact. The EC proposes evaluating levels of support based on the 1984/85 marketing year (the EC's PSEs for many commodities are at their lowest levels in that year).

The EC's position in the MTN reflects its basic objective to maintain the CAP and to continue to support its farmers, while attempting to control budget outlays. The EC holds that the imbalance between supply and demand is the cause of the crisis in agriculture, while the U.S. position reflects a basic belief that the imbalance is only a symptom of too much government intervention in agriculture. The EC has called "unrealistic" the U.S. proposal to phase out all agricultural subsidies in 10 years.

The EC has relied more in recent years on production quotas to control oversupply and will likely exhaust this option before pursuing larger reductions in supported prices. Initial steps toward reducing surplus production have been taken. These include dairy production quotas, producer co-responsibility levies on sugar, milk, and grains, limitations on producer support through the use of production ceilings, and a proposed set-aside program for grains. With the exception of the dairy quota, these measures have not significantly altered the surplus problem to date.

Some have speculated that, because of the increasingly burdensome cost of the CAP, the Community may be more willing in the current round to reduce producer price support and allow more liberal trade in agricultural products. However, the Community's 1988 budget and price proposals rely increasingly on supply control and other stabilizers to reduce the budgetary costs of support. The budget agreement also solved, at least in the short run, the financing problem by identifying a new basis for funding the Community's budget that will increase the revenues available for agricultural support activities. These measures should reduce budgetary pressures and thus weaken an important incentive for the EC to reform its system of agricultural support and liberalize agricultural trade.

Other Western Europe Countries

Western Europe countries that are not members of the EC (among which Austria, Finland, Norway, Sweden, and Switzerland are highlighted here) have similar patterns of agricultural production, characterized by northern temperate zone

crops (primarily grains), dairy, and other livestock. All five countries are OECD members, signatories to the GATT, and share many agricultural policy objectives. Among these are food security, self-sufficiency in basic agricultural products, maintenance of the rural population, preservation and development of the agricultural sector, production efficiency, regional development, adequate farm incomes, and reasonable consumer prices.

The mechanisms that each country uses to attain these objectives vary. The goals of food security and self-sufficiency are most often targeted through the use of price supports to ensure adequate supplies, in tandem with import restrictions and, occasionally, export subsidies to dispose of excess production. Supply controls and quotas are also frequently used to prop up prices or control surplus production when prices are supported. Maintaining rural population and developing the agricultural sector are ancillary objectives, achieved in part through price and income measures. These countries' governments also provide direct payments, subsidies for farm improvements and other investment aids, restrictions on farmland sales, and assistance for infrastructure development. Like most countries, their governments also have a number of plant and animal health and sanitation regulations, environmental protection, and tax policies. PSEs are not calculated for the non-EC Western Europe countries.

As a result of high price supports, some of these countries have to deal with many of the same problems of excess production and surplus disposal, and their attendant high costs, as have become common in the EC. Sweden, for example, has taken measures to reduce surplus production by means of production quotas, slaughter levies, herd buy-outs, a ban on investment in buildings associated with livestock production, and fallow compensation schemes for crops.

The costs of these programs have fallen on both consumers and taxpayers. High price supports result in higher consumer prices for supported commodities. Additional assistance, provided through government payments, tax relief, and development and infrastructure provision, add to the tax burden. In some of these countries, government subsidies reduce the consumers' burden, transferring it to taxpayers.

Low world market prices have put pressure on all countries who support farm prices above world levels by increasing budget outlays for price support operations. Despite being small agricultural exporters, these countries have felt the effects of the market disruptions of the 1980s. The Nordic countries--Finland, Iceland, Norway, and Sweden--have tabled a proposal for the agricultural negotiations in the Uruguay Round. Their proposal calls for short-term measures to correct market imbalances, long-term measures to reduce farm support, improved market access through reductions in import barriers, stronger GATT rules, reductions in surplus production through lower price supports, and restrictions on production.

Pacific Rim

Carol A. Goodloe

The six countries covered here--Japan, South Korea, Taiwan, Australia, New Zealand, and Canada--represent a diverse group of agricultural importers and

exporters, developed and newly industrializing, and densely and scarcely populated countries. With the exception of Canada, the region is often referred to as the Pacific Rim. However, even Canada is becoming more dependent on and integrated with the region, as Canada's trade with East Asian countries through its west coast ports becomes more significant.

Agricultural Policy Objectives and Mechanisms

Agricultural and trade policies, as well as the kind and degree of government intervention in the agricultural sector, reflect basic differences in these countries' net trade positions, levels of economic development, and resource endowments. As major agricultural exporters, Australia, New Zealand, and Canada emphasize trade liberalization and market access. As major food and feed importers, Japan, South Korea, and Taiwan are concerned with food security and stability of supplies. Both groups have policies to enhance farmers' incomes.

East Asia. Japan, South Korea, and Taiwan have had high economic growth rates over the past two decades, and enjoy high per capita incomes compared with other Asian countries. Agriculture in the East Asian countries is mainly private and small scale. Farmers in Japan and Taiwan obtain a large share of their income from nonfarm sources. Rice is the predominant crop, but the livestock sectors have expanded rapidly over the past decade, requiring large quantities of imported feed grains and oilseeds.

Following years of war in the 1940s and 1950s, agricultural policies centered on securing stable food supplies, increasing food self-sufficiency, and maintaining stable or low food prices. During the 1960s, policies shifted to increasing farmers' productivity and incomes to help keep resources from shifting out of agriculture into the rapidly growing manufacturing sectors. With greater instability in world agricultural markets evident in the 1970s and 1980s, food security has again become an important policy issue in Japan. Other policy issues there include maintaining the "Japanese diet" of high grain and fish consumption and low meat and fat intake, realizing higher farm productivity, and protecting natural resources and the integrity of rural villages. Agricultural policies in Korea and Taiwan have similarly focused on enhancing food security, narrowing the gap between farm and nonfarm incomes, and improving productivity.

The three governments have attempted to carry out their policy goals through intervention in domestic agricultural markets and through restrictive border measures. The governments are heavily involved in the procurement and marketing of food grains such as rice, wheat, and barley. High administered rice prices have promoted production, discouraged consumption, and caused surpluses since the late 1970s. To reduce surpluses, Japan and Taiwan initiated expensive riceland diversion programs and surplus disposal programs (subsidizing rice exports and using rice in animal feed). Expanding livestock sectors have made the region more dependent on imported feedstuffs. Feed grains are less strictly controlled, but are regulated by import quotas, tariffs, and, in Taiwan, group purchases. Other agricultural programs include postwar land reforms, research and extension, land development and improvement, irrigation projects, and rural infrastructure projects. These measures have helped increase agricultural productivity over the past several decades, especially in Korea and Taiwan. Farm productivity growth in Japan has slowed significantly since the mid-1970s, except in the production of pork and poultry.

Canada and Oceania. As major agricultural exporters of grains, oilseeds, livestock products, and some horticultural products, Canada and Oceania have farm policy goals which differ from those in East Asia. General policy goals have been to enhance output, stabilize incomes, and reduce risk. The instability of the 1970s prompted some shift in policy toward improving efficiency. Faced with low world prices and growing use of agricultural subsidies and trade barriers in the 1980s, these countries, as members of the Cairns Group, have been in the forefront of calling for worldwide agricultural policy reform to improve market access and reduce subsidies.

Boards that control production and marketing have been central to these countries' highly regulated agricultural sectors. The powers and functions of the various boards differ. Some operate mainly in the domestic market such as Canada's poultry and dairy boards, while others are major players in export markets such as the wheat boards in Canada and Australia. For many commodities, the boards allow domestic prices to be maintained above export prices. Barriers are imposed at the border to keep out imports and maintain prices above market levels.

In the 1980s, Australia and, especially, New Zealand have worked to streamline their marketing board operations to make them more consistent with market forces. In July 1984, a new government in New Zealand launched a broad reform of economic policy, including changes in agricultural policy and removal of subsidies. The government wrote off massive debts of the meat and dairy boards, but reduced regulation of production and marketing. The government is making changes in many aspects of the various marketing boards: electoral structures, financial and capital operations, price support, taxation, and stabilization schemes. Some liberalizing of the trade powers of the boards may occur. Government responsibility for setting prices and stabilizing incomes has been turned over to the respective industries.

In Australia, marketing boards and the associated regulations were significant for meat, wool, wheat, eggs, sugar, fruit, and rice. However, recent policy moves are pushing the agricultural sector toward a market orientation. Faced with a deteriorating economy, the government announced major economic reforms in late May to take place over the next 4 years, including provisions affecting agriculture. The reforms will reduce assistance to manufactured goods by lowering tariffs, currently high by world standards. Domestic pricing arrangements, some of which are operated by marketing boards, have been the major form of assistance. Assistance to sugar, dried vine fruits (raisins, sultanas, and currants), tobacco, citrus, and butter will be reduced. Subsidies on domestically produced fertilizer were removed in July, 1988. Producers will generally assume a greater share of risk, and the effective rate of assistance to agriculture will fall over the next 4 years.

Canada, in contrast, has been increasing support to the agricultural sector in the 1980s and continues to assist and enlarge its marketing boards. Large payments under stabilization programs have been made, primarily to grain and oilseed farmers, to offset the impact on income of low prices. Major changes in rail transportation legislation in 1984 were designed to reduce government subsidies and make the rail network more efficient. Farmers were to pay a larger share of rail costs, and in turn the railroads were to improve their grain-related export operations. Although larger quantities of grains and oilseeds are being exported as a result of the reforms, government rail subsidies have actually increased, contrary to the intent of the policy changes.

Measures of Government Intervention

Given the wide array of policy instruments used to assist the agricultural sectors of the six countries, the PSEs and CSEs are a useful way to measure the total income effect of the various policies on producers and consumers.

Support to Agricultural Producers. Aggregate producer support in Japan and Korea is the highest in the region (fig. 20). Support is high, with average 1982-86 PSEs over 50 percent. Aggregate support in Australia is low (less than 15 percent) and moderate in Canada, New Zealand, and Taiwan (between 15 and 50 percent). Despite their high total PSE, Japan's has grown only slowly over the 5-year period and Korea's has fallen slightly. Canada's aggregate PSE has grown the fastest, despite its moderate overall support to agriculture and its role as a major exporter. Consistent with their policies of reducing support to agriculture, New Zealand's aggregate PSE has fallen substantially and Australia's has been stable.

Support by commodity varies considerably and makes generalizations difficult (table 14). All commodities for which PSEs were calculated received at least some level of support over the period, except pork in Korea which was taxed. Support for Canada's and Oceania's main export commodities is generally low or moderate: wheat, barley, and pork in Canada; wheat, barley, beef, and sheepmeat in Australia; and beef and dairy products (manufacturing milk) in New Zealand. The exception is sheepmeat in New Zealand. Although support was very high in 1985 at 443 percent because of a dramatic drop in producer prices, it declined to 33 percent in 1986 as prices quadrupled and support under the supplementary minimum price scheme fell to zero. In general, support for livestock commodities across the region is lower than for crops, but dairy is often an exception. Some sectors in the East Asia region are more efficient than

Figure 20

Pacific Rim: PSEs (1982-86 average)

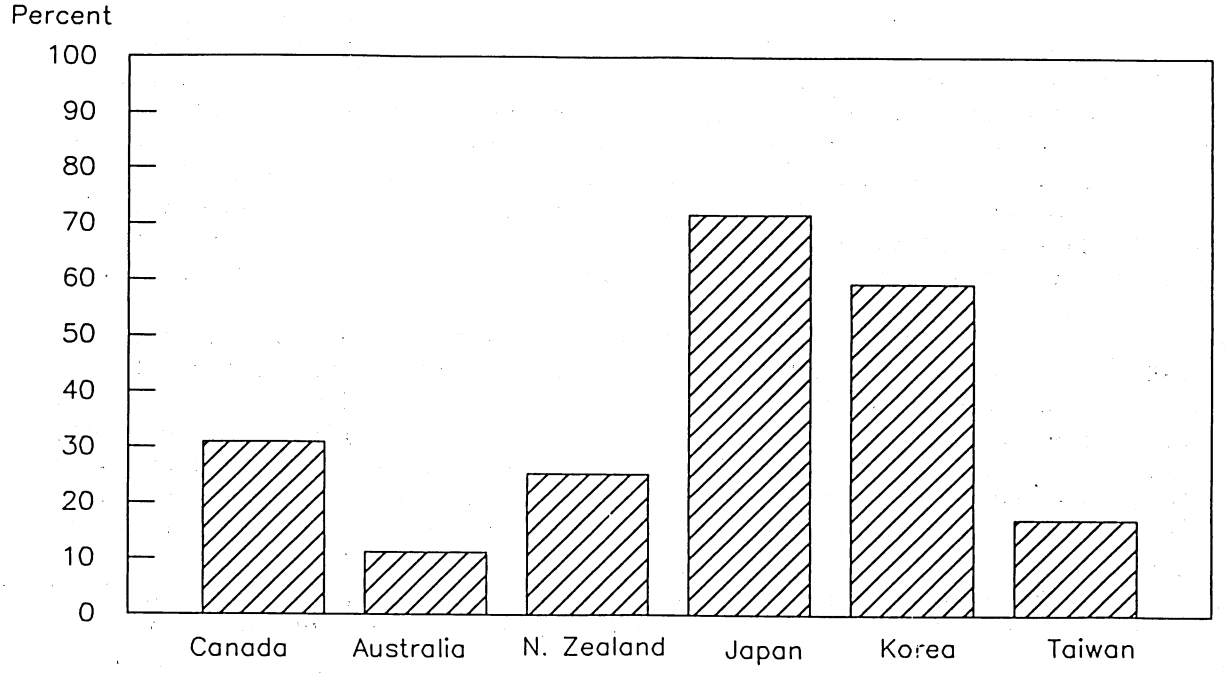


Table 14--Producer subsidy equivalents, 1982-86 average

Commodity	Canada	Australia	New Zealand	Japan	Korea	Taiwan
			Percent			
Crops:						
Wheat	30.4	6.8	NA	97.8	59.9	64.8
Rice	NA	13.8	NA	88.2	72.1	28.1
Barley	32.1	2.9	NA	96.9	65.6	3/ 74.3
Corn	10.0	NA	NA	NA	59.4	70.1
Soybeans	13.5	NA	NA	71.0	74.9	57.3
Sugar	34.6	12.9	NA	71.3	NA	29.2
Average 1/	26.6	7.3	NA	79.1	71.6	29.1
Livestock:						
Beef	9.9	6.4	12.1	59.0	66.4	18.4
Pork	10.7	NA	NA	47.5	-1.2	1.9
Poultry	16.7	NA	NA	22.6	41.5	23.4
Sheepmeat	NA	4.2	144.1	NA	NA	NA
Milk, manuf. 2/	73.7	23.2	11.8	95.3	46.4	42.9
Milk, fluid	NA	50.0	24.6	91.6	NA	NA
Average 1/	34.3	14.5	25.4	59.4	31.4	8.7

NA = Not available. 1/ Averages for crops and livestock weighted by value of production. May include some commodities not reported here. 2/ Total milk production for Canada, Korea, and Taiwan. 3/ Sorghum.

others; examples include poultry production in Japan and pork production in Taiwan. These commodities have low or moderate PSEs. On the other hand, Canada's dairy PSE is higher than every other country's except Japan.

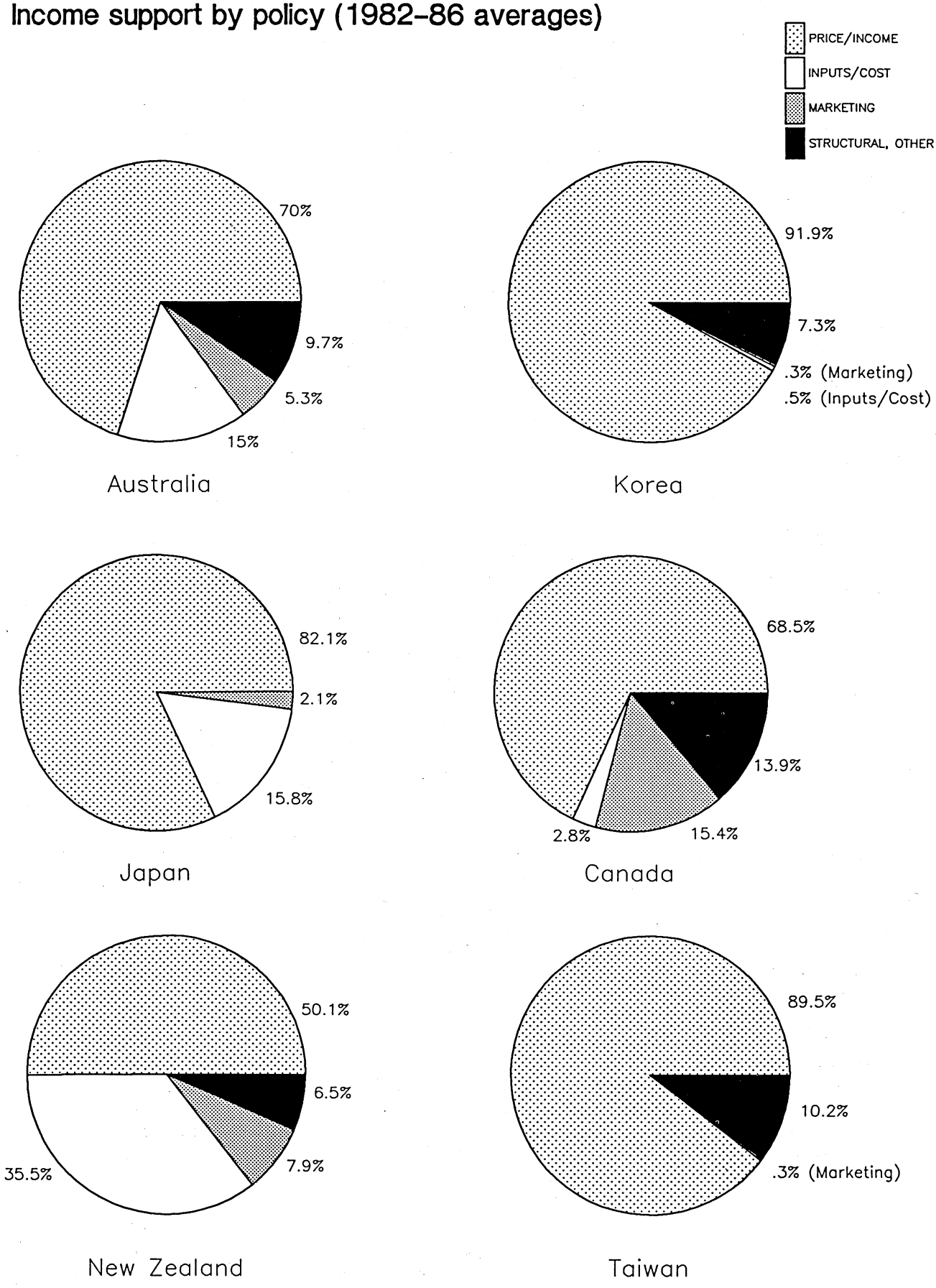
Rice is the predominant crop in the East Asian countries and receives the bulk of policy transfers--59 percent in Japan, 75 percent in Korea, and 52 percent in Taiwan--even though the rice PSE is not necessarily the highest. For the three developed exporting countries, the commodity with the highest PSE also receives the largest share of policy transfers. In New Zealand, sheepmeat receives 52 percent of total policy transfers, while the dairy sector accounts for the largest share of policy transfers in Canada (33 percent) and Australia (49 percent).

Producer support can also be characterized by policy. For all the countries, the major share of support derives from price and income policies, which include state trading, two-price regimes, stabilization and deficiency payments, tariffs, quotas, and export subsidies (fig. 21). The effects of these policies, which often result in a domestic price different from the world price, are usually more trade- and resource-distorting than are the effects of other policies.

The main policy instrument in the price/income category in Japan, Korea, and Taiwan is state trading, whereby a government agency exercises monopoly control over the pricing and marketing of domestic and imported commodities.

Figure 21

Income support by policy (1982–86 averages)



This control results in a higher domestic price than import price, thus providing income support to producers. State trading accounts for 68 percent of total policy transfers in Japan, 92 percent in Korea, and 90 percent in Taiwan. Structural and development programs are more important in Taiwan and Korea than in Japan, reflecting their attempts to improve farm productivity and longer term income prospects in rural areas.

Producer support from the price/income category for Canada and Oceania comes from a variety of programs. Canadian dairy and poultry producers are supported by supply management systems that keep producer prices above world prices and limit imports. Stabilization payments to western Canadian grain and oilseed farmers have grown rapidly the past several years. In Australia, the main policy instruments in the price/income category have been directed toward the dairy industry. These include levies on domestic sales used to equalize export returns (discontinued in July 1986) and a premium on fluid milk. In 1986, the government made a substantial payment to wheat producers under the guaranteed minimum price policy, the first since 1972/73. In New Zealand, the major price/income policy has been the supplementary minimum price scheme for wool, sheepmeat, and beef producers, which in some years acted as a direct export subsidy when the minimum price was above the export price.

Programs to reduce input and other costs are important in Oceania. In New Zealand, interest concessions to marketing boards accounted for a fifth of total producer support. Fertilizer subsidies and tax concessions are the main input/cost subsidies in Australia. Marketing subsidies are significant in Canada, reflecting subsidized freight rates and other expenditures on railroads. Canada's provincial programs are also growing in significance, accounting for about 6 percent of total support.

Who Pays For Producer Support? The average CSEs mirror the PSEs and provide evidence that consumers pay for much of producer support through higher than market prices, especially in the East Asian countries (fig. 22). CSEs were not calculated for Oceania. The state trading agencies that support producers also tax consumers because consumer prices are higher than import prices. Just as most producer support stems from the operations of the state trading agencies, so too do consumer taxes for food, feed, and animal products: 79 percent in Japan, 100 percent in Korea, and 93 percent in Taiwan. Wheat flour consumption in Korea was the only commodity subsidized over the period (table 15). Although CSEs are high in the East Asian countries, they have been stable.

In Canada, producer support for most programs derives from direct government outlays rather than indirectly from higher consumer prices. The aggregate CSE in Canada is small, with only dairy showing a significant consumer tax. For poultry, the PSE and CSE are lower than what might be expected, given the supply management system that regulates production and imports. But as the Canadian dollar depreciated during the 1982-86 period, Canadian support prices fell, when expressed in U.S. dollars, resulting in a decline in measured support.

Proposals on Agricultural Policy Reform

Much attention has been focused over the past 2 years on agricultural policy reform and the current multilateral trade negotiations as a means to provide relief from large budgetary expenditures on agriculture, mounting subsidies,

Figure 22

Pacific Rim: CSEs (1982-86 average)

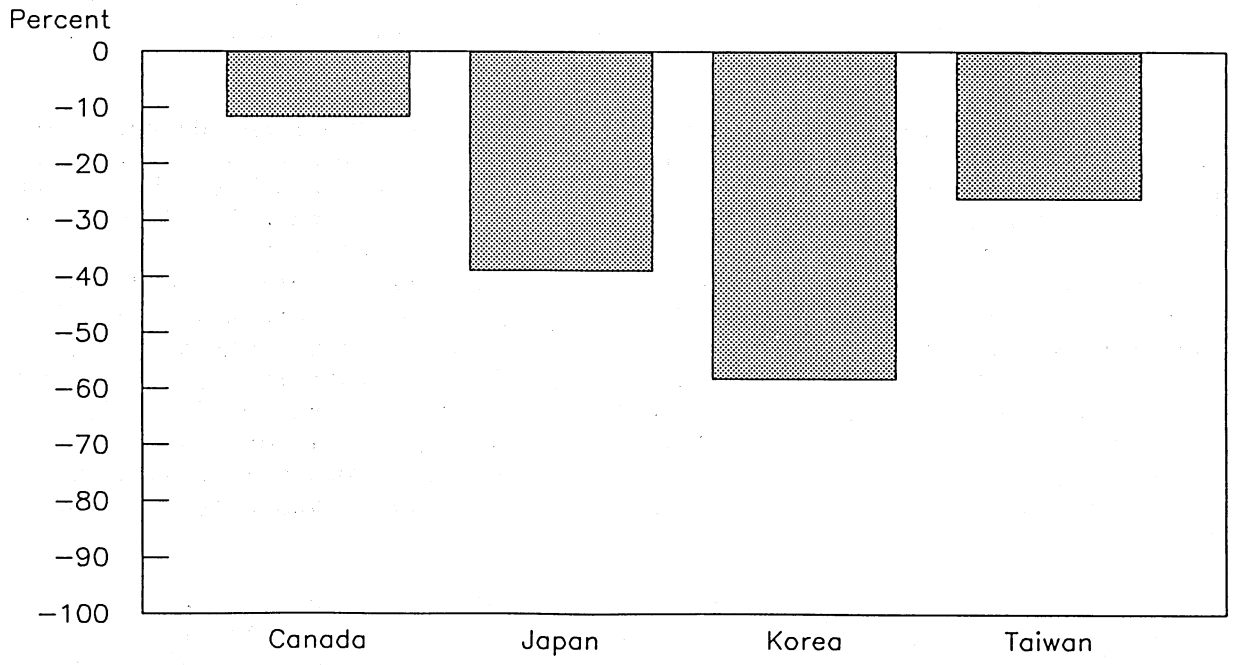


Table 15--Pacific Rim CSEs, 1982-86 average

Commodity	Canada	Japan	Korea	Taiwan
		Percent		
Crops:	-2.1	-51.4	-65.2	-27.3
Wheat	-2.7	-31.5	17.2	-9.2
Rice	NA	-63.6	-69.5	-28.2
Barley	-.1	-17.8	-70.8	2/-15.5
Corn	-1.5	-2.4	NA	-18.1
Soybeans	NA	NA	-72.7	-20.2
Sugar	-4.0	-50.4	-69.5	-65.4
Livestock:	-13.4	-26.9	-44.7	-21.2
Beef	-.7	-32.8	-72.3	-11.3
Pork	-.3	-21.0	-8.8	NA
Poultry	-4.1	-8.0	-39.7	-38.9
Milk, fluid	-36.4	-35.0	-67.7	-9.8
Dairy products	-40.1	-43.5	1/ 20.9	NA

NA = Not available. 1/ Eggs. 2/ Sorghum.

and low world prices. In 1987, the United States made the first proposal to the GATT on agricultural policy reform, the centerpiece of which was to eliminate all agricultural subsidies within 10 years.

Under the leadership of Australia, the Cairns Group has pushed strongly for removing agricultural subsidies, improving market access, and strengthening GATT rules dealing with agriculture. The group's GATT proposal in October 1987 reflects these concerns. Canada also submitted a separate proposal on agricultural policy to the GATT. While not differing significantly from the Cairns Group proposal, Canada emphasized reducing trade-distorting subsidies rather than all production and export subsidies.

Japan's proposal to the GATT was much different in spirit and tone from the proposals of the developed exporting countries. Japan focused on its position as an importer, depending on foreign sources for much of its food supplies. Japan also emphasized the social and noneconomic role of agriculture, such as providing food security and employment. Japan's proposal is less sweeping than others, calling for elimination of export subsidies and managing other subsidies to reduce their effect on trade. Japan favors a more limited commodity and country focus, using the traditional request-and-offer bargaining method.

Prospects for Trade Liberalization

The six countries represent the extremes regarding government intervention and policy reform proposals to the GATT, and the prospects for meaningful trade liberalization vary accordingly. Australia and New Zealand, with low levels of government support, have been in the forefront calling for trade liberalization. Most studies analyzing the implications of trade liberalization in agriculture show Australia and New Zealand to be the biggest gainers. With policy reform already in motion, they would face less dislocation of producers and institutions than other countries as a result of trade liberalization.

The East Asian countries are at the other extreme. Although most studies show gains in total economic welfare for Japan, consumers would gain at the expense of producers. Powerful producer groups are, therefore, opposed to actions that would reduce the support they currently receive from their governments. Taiwan is not a member of the GATT, although it likely would be affected by measures to liberalize world trade. South Korea has not made a formal proposal to the GATT, but as a member may be forced to make some concessions on agricultural imports to comply with its international obligations. Because of strong government commitments to the farm sectors for social and political reasons, liberalization of agricultural markets in the East Asian countries is likely to proceed only gradually and with prodding from other countries.

Canada occupies the middle ground. Some export commodities would likely gain from trade liberalization, although elimination of Canada's rail subsidies would substantially raise farmers' costs of exporting grains and oilseeds. Other commodities would face unwanted competition and dislocation. Canada is likely to go along with most proposals to liberalize trade, while working to preserve its marketing boards and stabilization programs.

South and Southeast Asia

Maurice R. Landes 4/

In most countries of South and Southeast Asia, agriculture accounts for a major share of income, employment, and trade, and food accounts for the major share of consumer budgets. Agricultural development, directed at enhancing farm output, reducing poverty, providing assured supplies of food staples, and expanding exports are prominent goals of both agricultural and general economic policy.

Agricultural Policy Objectives and Mechanisms

Principal agricultural policy instruments in the region are public investment in farm infrastructure, subsidies on variable inputs, price supports, and state controls on trade. In the more developed countries in the region, there tends to be less emphasis on the farm sector as an engine of growth and on maintenance of low consumer prices, and more emphasis on achieving gains from farm trade.

South Asia. This region includes Bangladesh, India, Pakistan, and Sri Lanka. In most South Asian countries there are strong agricultural resource endowments, agriculture is the largest sector of production and employment, and the welfare of predominantly poor populations is heavily influenced by the availability and price of food staples. Improved food grain self-sufficiency, involving both higher farm productivity and incomes, and stable, affordable consumer prices are primary goals. Farm exports, mostly relatively high-valued and value-added products, are important to all countries, but export expansion has been a lower priority than food self-sufficiency in all countries except Pakistan.

General economic policy in the region has emphasized infrastructural development in farm and nonfarm sectors, and creation of employment through import substitution rather than export expansion. There is a substantial public sector role in the allocation of scarce capital, and a large share of development capital is generated through price regimes that draw resources out of agriculture. Trade policy promotes domestic policy goals by insulating domestic markets from world markets. Constraints on farm trade typically tax producers and protect consumers, while constraints on nonfarm trade generally result in protection for producers and taxes on consumers. Overvalued exchange rates implicitly subsidize imports and tax exports, and are typically combined with quantity controls on imports to help regulate expenditure of scarce foreign exchange.

There is a common structure to farm programs and policy instruments in the region. All countries allocate large shares of public investment to develop farm infrastructure, particularly irrigation, roads, marketing facilities, and research and extension capabilities. Most countries have effective support price mechanisms for major food grain, oilseed, and fiber crops. However, there is only limited use of output price incentives to boost output, because extensive subsistence production and infrastructural bottlenecks inhibit price

4/ Douglas Brooks, Gary Ender, and Leslie Ross contributed material for this section.

responsiveness and because of possible adverse effects on consumer prices. Input subsidies and improved access to inputs such as irrigation, fertilizer, and credit, together with infrastructural investment, are generally viewed as the best means to stimulate technology adoption.

The principal mechanisms for protecting consumer interests in most of the region are public distribution systems that store and sell domestically procured and imported food grains and some other staples at subsidized prices. These systems operate alongside private sector traders, but control enough domestic production, as well as all imports, to assure adequate supplies and stable prices. Some governments maintain buffer stocks of domestic and imported food grains to help compensate for weather-induced supply shocks and assure price stability.

Imports of food grains and other major farm commodities are firmly controlled by state trading organizations or other regulatory measures to assure that import levels and pricing balance producer, consumer, and financial interests. Farm exports are also heavily regulated to assure adequate domestic supplies. Taxes on farm exports are an important revenue source.

Southeast Asia. Indonesia, Malaysia, the Philippines, and Thailand have climates that favor tropical agriculture, but prevent economic cultivation of temperate zone crops, including wheat. Although agriculture generally accounts for a smaller share of income and employment than in South Asia, it is still a major contributor to income and, particularly, export earnings. Nonfarm sectors are more important sources of employment, growth, and resources than in South Asia, per capita incomes are substantially higher, and consumers generally pay higher food prices and consume a more diverse diet.

Principal farm policy goals include self-sufficiency and affordable consumer prices for rice and selected food staples, diversification of production, and export expansion. Self-sufficiency in rice and corn have been key objectives in Indonesia and the Philippines, while Malaysia's limited viable production capacity is leading to a gradual easing of rice self-sufficiency goals. Crop diversification, aimed at boosting farm income, meeting a broader range of domestic demand, and expanding high-valued exports, is an increasingly important priority throughout the region. Thailand and Malaysia are major exporters of farm products, including rice, corn, cassava, palm oil, and rubber. These countries, along with the Philippines and Indonesia, are placing increasing priority on export growth.

Differences in general economic and trade policies between South and Southeast Asian countries reflect differences in resource endowments, per capita income, and development. Public infrastructural investment and economic regulation are significant, but there is generally a larger private sector role in allocation of capital and less economic taxation of agriculture to generate resources. Export growth is a key element of development plans, particularly in Malaysia and Thailand, and trade, regulatory, and exchange rate policies encourage export competitiveness, rather than import substitution. Economic shocks in Indonesia (oil revenue losses) and in the Philippines (a burdensome foreign debt) have led to more emphasis on both import substitution and export diversification.

Common farm policy instruments in Southeast Asia are public investments in roads, irrigation and other infrastructure, subsidies on water and some other variable inputs, price supports, and varying degrees of controls on trade.

Indonesia maintains relatively strict control of farm trade, particularly imports, through licensing and state trading, as does the Philippines. Malaysia provides border protection for its rice sector, but limits intervention in other farm trade primarily to duties on exports. Thailand imposes variable taxes on farm exports and limited controls on bulk imports, but restricts imports of many processed and high-value farm products.

Policies addressing consumer interests consist primarily of border measures and domestic market interventions to maintain stable and affordable prices. A larger and gradually increasing share of foreign and domestic farm trade is conducted by the private sector. Subsidized government distribution systems generally do not exist in the region, although state trading or logistical agencies still play major roles in foreign trade and domestic price stabilization for rice, corn, and other staples in Indonesia, the Philippines, and Malaysia.

Effects of Policies on Producers and Consumers

The effects of policies on producers and consumers can be measured using a range of methods. For South and Southeast Asian countries, comparable estimates are available for a limited number of countries and commodities using two methods: producer (consumer)-to-border price ratios, and producer (consumer) subsidy equivalents (PSEs and CSEs). The price ratios simply indicate the extent to which all policies together result in domestic prices that are higher or lower than comparable world prices. PSEs and CSEs are an accounting of the subsidies (or taxes) on producers and consumers resulting from specific policy interventions. They include input and nonprice interventions not covered by the price ratios, as well as distortions between domestic and border prices.

Table 16 contains 1980-82 average producer-to-border price ratios for selected countries and commodities in each region, in addition to selected economic indicators for each country. Several key observations can be made from these data. First, although there may be offsetting input subsidies that are not accounted for in the price ratios, it is common for countries in these regions to maintain producer prices that are below the world market, or to tax producers. This appears to occur primarily in the case of food staples, such as rice in India and wheat in Pakistan, and for export crops, such as rice in Pakistan and Thailand, poultry in Thailand, and sugar in the Philippines (India and Pakistan were also exporters in those years). However, a number of the region's major high-value exports, including cotton, tea, rubber, palm oil, and spices, are not included in these data.

Second, relatively high price ratios--or producer subsidies--tend to be associated with nonstaples that account for small shares of the diet, including meats and dairy products, or with crops that are being promoted through price incentives, such as corn in Indonesia. A third observation is that producer taxation is more common in South Asia, where per capita incomes are relatively low and agriculture tends to account for a larger share of the economy, while subsidization is more common in Southeast Asia.

The consumer-to-border price ratios shown in table 17 largely mirror the producer ratios. Where producers receive relatively low prices, consumers also pay relatively low prices. Consumption of food staples, including rice and wheat in South Asia and rice in Southeast Asia, tends to be subsidized. Home consumption of export crops, such as rice in Pakistan and Thailand, also

Table 16--Selected indicators for South and Southeast Asia

Country	Per capita GNP, 1983	Agriculture as a percentage of GNP, 1984	1980-82 producer/border price ratios						
			Wheat	Coarse grain	Rice	Ruminant meat	Non-ruminant meat	Dairy	Sugar
	Dollars	Percent	Ratio						
South Asia:									
Bangladesh	130	48	0.90	1.00	1.00	1.00	1.00	1.70	0.75
India	260	35	1.00	1.00	.90	1.00	1.00	1.80	.85
Pakistan	380	24	.90	1.00	.70	1.00	1.00	2.00	.75
Sri Lanka	360	28	NA	NA	NA	NA	NA	NA	NA
Southeast Asia:									
Indonesia	540	26	1.00	1.30	1.00	1.80	1.50	2.00	2.60
Malaysia	1,980	21	NA	NA	NA	NA	NA	NA	NA
Philippines	660	25	1.00	1.00	1.00	1.50	1.25	2.00	.75
Thailand	860	20	1.00	1.00	.90	.80	.80	1.80	1.00

NA = Not available.
Sources: (47) and (54).

Table 17--Consumer-to-border price ratios for South and Southeast Asia, 1980-82

Country	Wheat	Coarse grain	Rice	Ruminant meat	Non-ruminant meat	Dairy products	Sugar
				Ratio			
South Asia							
Bangladesh	0.90	1.00	1.00	1.00	1.00	1.70	0.75
India	.95	1.00	.85	1.00	1.00	1.80	.85
Pakistan	.90	1.00	.70	1.00	1.00	2.00	.75
Southeast Asia							
Indonesia	1.50	1.30	.85	1.80	1.50	2.00	2.60
Philippines	1.00	1.30	1.00	1.50	1.25	2.00	1.00
Thailand	1.00	1.00	.90	.80	.80	1.80	1.00

Sources: (47) and (54).

tends to be subsidized, although consumers in the Philippines do not appear to benefit from the tax on sugar producers. Consumption of nonstaples, like meats and dairy products, tends to be taxed, as does consumption of some imports like wheat in Indonesia and corn in the Philippines. In several cases, such as wheat and rice in India and rice in Indonesia, government distribution programs and interventions on behalf of consumers of food staples are reflected in consumer price ratios that are lower than those for producers.

PSE and CSE estimates are available for only a few countries in South and Southeast Asia, and for a limited number of commodities. The 1982-86 average PSEs and CSEs, aggregate and by commodity, are shown in table 18 and figures 23 and 24. Although there are some discrepancies, the broad conclusions drawn from the price ratio information still hold. Producer taxation and consumer subsidies are still evident for staples and export crops, including cotton, in South Asia, although not for rice in Southeast Asia. PSE and CSE coverage of nonstaples and/or promotional crops is limited to oilseeds and oils in India, but they also tend to indicate subsidies to production and taxes on consumption. PSE and CSE coverage is too limited to assess whether producer subsidization is more prevalent in Southeast Asia.

The subsidy equivalents incorporate more complete policy coverage than the price ratios, and permit examination of contributions made by various policies to overall government intervention. Table 19 provides a breakdown of the role of various subsidizing and taxing policies to the aggregate PSEs and CSEs for each country.

Border measures, including such policies as duties, taxes, and state trading, are the major source of both producer taxation and consumer subsidization in India, Pakistan, and Thailand. They are also a major source of producer subsidies and consumer taxes in Indonesia. Domestic pricing and distribution policies for food grains in India and Pakistan are reflected as consumer subsidies, and India's high-price policy for edible oils shows up as a consumer tax. But, the influence of these policies relative to border measures is small. A key implication is that, because border protection is the major source of both producer taxes and consumer subsidies on food staples, liberalization of trade would require a major increase in the cost of distribution programs to buffer consumers from higher prices.

Input policies are nonprice interventions that are covered in the subsidy equivalents, but not in the price ratios. Except in Indonesia, the measured effects of input subsidies, primarily including fertilizer, credit, and irrigation, are relatively small compared with border measures.

Discrepancies in magnitude and direction between the price ratios and the subsidy equivalents reflect time and method differences, in addition to differences in policy coverage. The subsidy equivalents account for recent changes in world reference prices, with lower recent rice prices particularly affecting the estimates for Thai and Indonesian rice. The relative size of the subsidy equivalents is also affected by the fact that they compare world and domestic prices at more equivalent stages of marketing and processing.

Recent Policy Changes

There have not been any major shifts in economic, trade, or farm policies in South and Southeast Asia over the last several years. There has, however, been further gradual evolution of policies, to a large extent associated with

Table 18--PSEs and CSEs for South and Southeast Asia, by commodity, 1982-86 averages

Commodity	South Asia		Southeast Asia	
	India	Pakistan	Indonesia	Thailand
Producer subsidy equivalents:			Number	
Commodities covered	7	4	1	1
			Percent	
Aggregate PSE	-18	-23	14	1
Commodity PSEs--				
Rice	-17	10	14	1
Rice (basmati)	--	-75	--	--
Wheat	-35	-20	--	--
Peanuts	17	--	--	--
Rapeseed	3	--	--	--
Soybeans	-11	--	--	--
Cotton (ms)	-14	-23	--	--
Cotton (ls)	-24	--	--	--
Consumer subsidy equivalents:			Number	
Commodities covered:	10	4	1	1
			Percent	
Aggregate CSE	4	17	-22	21
Commodity CSEs--				
Rice	3	-23	-22	21
Rice (basmati)	--	44	--	--
Wheat	21	14	--	--
Peanut meal	36	--	--	--
Rapemeal	47	--	--	--
Soymeal	34	--	--	--
Peanut oil	-39	--	--	--
Rapeoil	-49	--	--	--
Soyoil	-35	--	--	--
Cotton (medium staple)	26	38	--	--
Cotton (long staple)	23	--	--	--

-- = not applicable

Source: ERS calculations.

Table 19--PSEs and CSEs for South and Southeast Asia, by broad policy category, 1982-86 averages

Type of subsidy	South Asia		Southeast Asia	
	India	Pakistan	Indonesia	Thailand
	Percent of producer value			
Producer subsidies	4	7	14	4
State control of trade	--	--	5	--
Price and marketing support	--	--	--	0
Inputs	4	7	9	3
Fertilizer	1	3	--	0
Credit	1	1	--	--
Other variable	2	3	--	3
Producer taxes	-22	-29	--	-2
Export taxes and duties	0	--	--	-2
State control of trade	-22	-29	--	--
	Percent of consumer value			
Consumer subsidies	4	16	--	21
Export taxes	0	--	--	21
State control of trade	1	12	--	--
Price and distribution policies	3	4	--	--
Consumer taxes	-1	--	-22	--
State control of trade	--	--	-22	--
Price and distribution policies	-1	--	--	--

Note: Some totals may not add because of rounding.
-- = Not applicable.

Source: ERS estimates.

Figure 23

Southeast Asia: Trends in aggregate PSEs

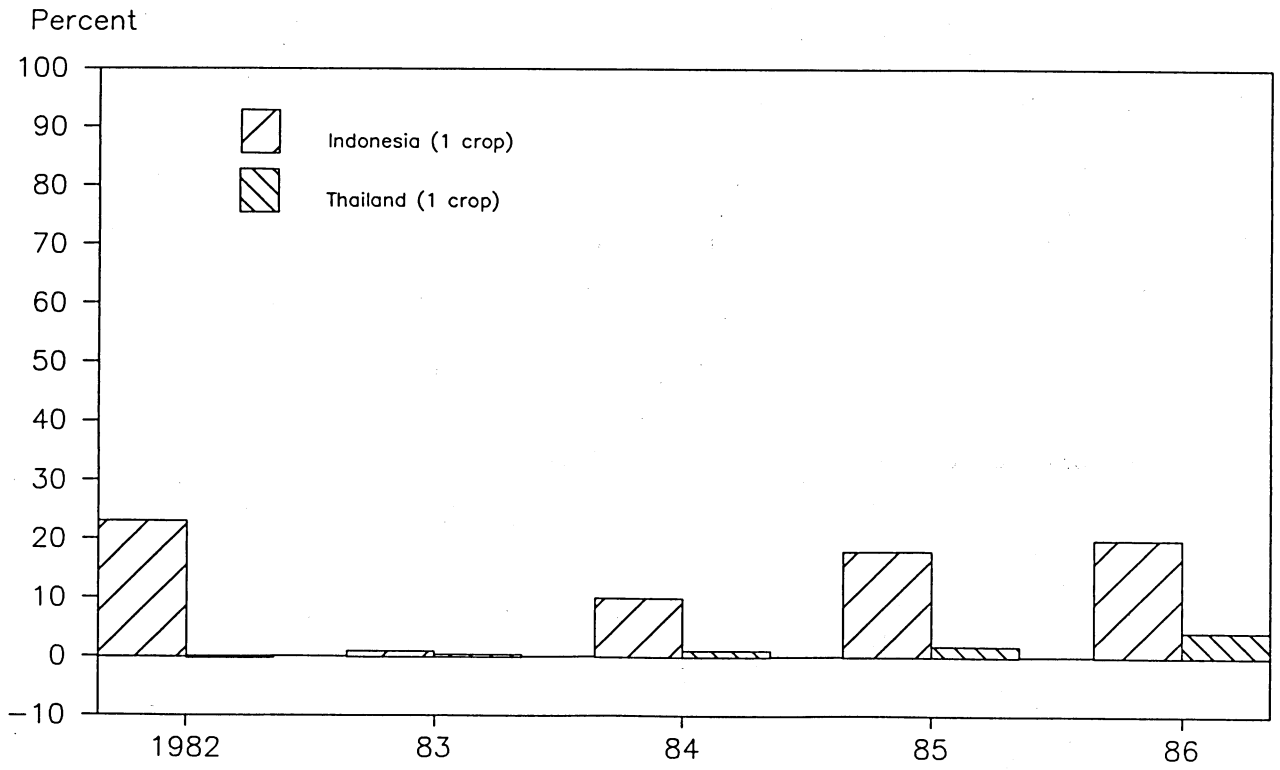
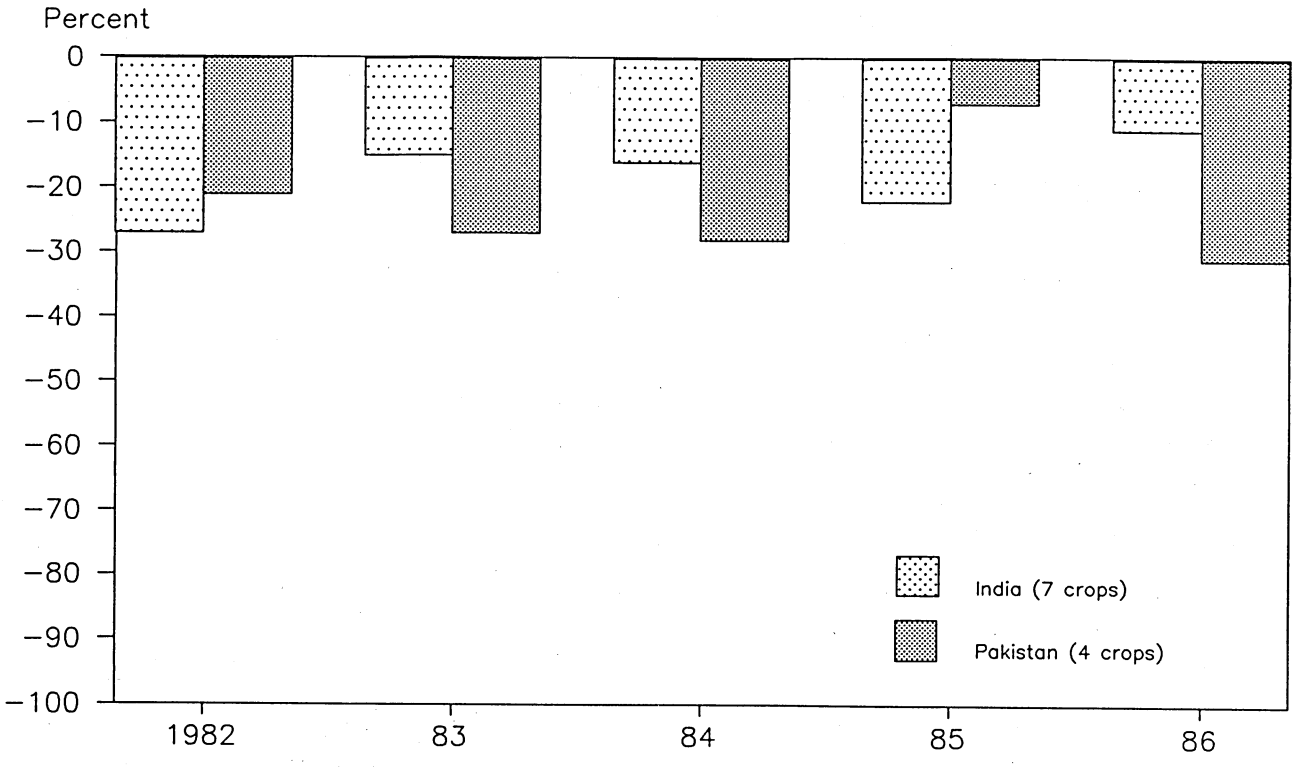


Figure 24

South Asia: Trends in aggregate PSEs



the development process, and some policy reactions to world economic and commodity developments. Since the late 1970s, particularly in South Asia, there has been gradual movement toward more growth-oriented policies aimed at utilizing newly developed infrastructure to achieve a more rapid reduction of poverty. In order to achieve faster growth and meet rising foreign capital needs, there has been more emphasis on expanding exports, increasing the role of the private sector in production and investment, and improving agricultural incentives.

South and Southeast Asian countries have generally not faced the acute debt problems of many LDCs in Africa and Latin America, but emerging resource and foreign exchange constraints hamper public investment in the farm sector and also lead to more emphasis on export expansion. There has generally been a modest liberalization of exchange rate policies, imports of industrial raw materials and capital goods, and value-added exports to boost economic efficiency and export competitiveness.

Changes in farm policies have included gradual reductions in input subsidies, crop diversification, efforts to better target the benefits of producer and consumer programs, some liberalization of domestic and foreign marketing, and measures to enhance or maintain export competitiveness. Some countries, including Pakistan, India, Indonesia, Malaysia, and Sri Lanka, are gradually reorienting their goals from food grain self-sufficiency toward crop diversification, better targeting of benefits, and improved economic efficiency. Most countries are attempting to reduce budgetary outlays on input subsidies, but the benefits of these programs for many small and subsistence farmers are making cutbacks difficult.

Pakistan, Indonesia, the Philippines, and, to a lesser extent, India are taking small steps to liberalize domestic and foreign marketing of some crops. In Malaysia and Thailand, many farm goods, with the exception of high-valued imports, are already traded relatively freely. A number of farm product exporters in the region, including Thailand (rice), Pakistan (cotton and rice), and India (cotton), have imposed smaller (implicit or explicit) taxes on exports in recent years. However, these smaller taxes likely represent efforts to maintain competitiveness in very weak markets, rather than to liberalize trade.

Prospects for Liberalization

Gradual shifts in the nature of government intervention in agricultural production, marketing, and trade are likely as the development process continues in South and Southeast Asia. Dependence on agricultural taxation will be gradually reduced by growth in other sectors, and the elimination of infrastructural bottlenecks will gradually allow farm output to be more price-responsive. Growth in incomes and better capabilities for targeting consumer subsidies will also reduce the need to keep food prices low and stable. However, the relatively large contribution of agriculture to the region's economies, extensive poverty, and the need for low-priced food staples suggest these types of adjustments will come slowly.

The data for the more developed countries in the region suggest that protection of farm production and taxation of consumers may be rising as development proceeds. Large poor rural populations create pressure to avoid exposing the farm sector to depressed world prices. As a result, some of the protection indicated might disappear in a freer world trading environment when world prices of a number of commodities would likely be higher.

The information also suggests that protection tends to be higher for nonstaples and high-valued and processed products. The potential for liberalization in these areas will likely depend on foreign exchange availabilities, capacity to produce domestically, and developmental concerns. As an example, tight foreign exchange supplies and untapped production capacity in several heavily impoverished regions contribute to India's protection of its oilseed sector.

Policy adjustments to boost export earnings by expanding supplies of export crops, including reduced taxation, more liberal raw material imports, and privatization of trading, could occur more rapidly if market opportunities exist. Export expansion is becoming a more important goal in the region, although the focus is likely to be on value-added exports. India and Pakistan tax producers of raw cotton through state control of exports, a measure that both earns export tax revenues and provides an implicit subsidy to textile producers. In this case, liberalization of raw cotton trade would likely hinge on freer trade in textiles.

The participation of South and Southeast Asian countries in the Uruguay Round negotiations on agriculture is likely to be characterized by several themes. First, Indonesia, Malaysia, the Philippines, and Thailand are members of the Cairns Group and are likely to push for a freer world trading environment. However, their particular goal appears to be gaining better access to export markets, and it is unclear how receptive they will be to improving access to their own markets.

Second, as developing countries with balance of payments constraints, Southeast and, particularly, South Asian countries, are likely to seek continued special and differential treatment for agriculture. At a minimum, they will want to be able to maintain investments in agricultural development and to regulate imports. South Asian countries will probably resist any measures that would require exposing domestic consumers to higher world market prices for food staples and to exposing producers and consumers directly to fluctuations in world market prices.

Finally, many South and Southeast Asian countries are likely to place a high priority on obtaining market access for nonfarm goods in developed countries to compensate for any concessions made in agriculture. Because agriculture is the dominant employer, even relatively small losses of farm jobs could strain the capacity of nonfarm sectors to absorb them. These countries are likely to seek opportunities to expand employment of displaced labor in export sectors, and to earn foreign exchange to finance any increase in the agricultural import bill.

Latin America

John E. Link

Latin America is a highly diversified region, with countries ranging from developed to developing and from major agricultural exporters to importers. The region is a net exporter of farm products. Farm products account for about 30 percent of the region's exports and about 12 percent of its imports. Major agricultural exports include coffee, sugar, soybeans, beef, cotton,

cocoa, feed grains, bananas, and wheat. Of total world exports, Latin America accounts for 50 percent of coffee, 40 percent of sugar, 46 percent of soybean meal, 16 percent of soybeans, 8 percent of meat, and 7 percent of cereals. Several countries in the region are world leaders in exports of agricultural commodities.

Factors contributing to the competitiveness of Latin America agriculture are low-cost labor, abundant natural resources, and government incentives and subsidies. Working against the region's competitiveness in farm exports are high external and internal transportation costs, the lack of storage facilities, and the high cost of capital.

Agricultural Policy Objectives and Mechanisms

Given the relative importance of agriculture as a share of economic activity and as a generator of employment and foreign exchange, agricultural and trade policies affect a significant portion of the population and economies of the region. Changes in agricultural and trade policies have high political visibility.

A number of factors within the Latin American economies influence agricultural policymaking. First, in most of the countries there is an acceptance of administrative intervention as a means of addressing economic problems. Pressures within the economies have been dealt with through administrative decrees. In turn, the implementing agencies exercise considerable latitude in administering these decrees in order to influence economic behavior in the directions considered appropriate. This policymaking procedure is in sharp contrast to the developed economies where policies are derived from legislation setting forth farm programs. Second, the long-term growth strategies have been largely based upon import substitution. Under such a strategy, imports are controlled and domestic import-substituting production encouraged.

The 1970s saw the beginning of a shift in the direction of food policy in the region. Many government enterprises were returned to the private sector, and government intervention was generally reduced, except for specific taxes and subsidies applied to achieve national economic goals and priorities. Through the 1970s, both domestic and foreign demand for goods and services grew, much of the growth financed by international borrowing. With the slowdown in the world economy in the late 1970s and early 1980s and rising interest rates, the region found itself in serious financial trouble.

Most Latin American countries have taken measures to control or accommodate debt and inflation since the early 1980s. In many countries, measures were taken to reduce domestic demand in order to diversify the basket of goods available for export, to increase total exports, and to reduce imports. Such actions as major devaluations, reduction of consumer subsidies, and anti-inflationary programs have been directed toward these objectives. More emphasis has recently been given to stimulating exports to generate a trade surplus to service the region's burdensome foreign debt. The current economic policy objectives of many countries in the region are to promote self-sufficiency at a minimum, with additional goals of maximizing export earnings and minimizing foreign exchange outlays. This has meant a variety of border controls and foreign exchange adjustments for those highly dependent on trade.

Agricultural goals and priorities in practically all Latin American countries are concerned with: (1) the expansion of agricultural production for both domestic and export markets, (2) national food self-sufficiency or import substitution, (3) stabilization of food prices, (4) rural development, and (5) improved nutritional levels. All countries recognize the need to improve nutrition, but this policy goal has not received a priority as high as that given to expanding production.

The emphasis in Argentina during the past few years has been on expanding production and recapturing export market shares for grains and livestock. In Mexico, the emphasis has been on expanding domestic production to save foreign exchange. Brazilian emphasis has been on expanding production and exports as in the case of soybeans and increasing self-sufficiency as with wheat. In all three countries, there have also been efforts to keep the cost of basic foods affordable. Most Latin American countries have a list of primary consumer necessities (such as bread, milk, cooking oil) for which there is great political sensitivity to price rises. There is great reluctance to see these prices rising, even during periods of high inflation. Consequently, various measures to subsidize consumers and producers or control prices are employed. While most of the countries try to expand agricultural production, a major objective of policies affecting the farm sector is to provide affordable food to the growing urban populations.

Controlling trade is a main way to achieve agricultural goals in Latin America. This has been done through licensing and/or establishing quantity controls to limit imports and protect domestic production from foreign competition. And trade controls have been used to restrict exports to assure adequate domestic supplies at affordable prices, resulting in a tax on domestic producers whose goods would have earned more in foreign markets. Intervention, through government marketing institutions or price controls, is common in the domestic marketing system. Price support programs, with varying levels of effectiveness, have been a fixture of the policies of nearly all Latin American countries. Credit programs and sometimes input subsidies are other major means of influencing the farm sector.

Trade Policies. Currencies have been devalued frequently and multiple exchange rate systems instituted to maintain trade competitiveness. Foreign exchange proceeds in many countries have to be surrendered to the central banks. Recent ERS studies covering the 1982-86 period indicated that Argentina and Brazil had periodically made exchange rate adjustments which undervalued their currencies and resulted in producer subsidies. During these years, Argentine and Brazilian farmers benefitted from an exchange rate that gave them more pesos and cruzieros per dollar of exported commodities. At other times, the generally overvalued currency in Brazil has meant lower domestic producer prices and represented, in effect, a taxation of domestic producers. Mexico had an exchange rate subsidy during the entire period. In many Latin American countries, exchange rate policies are primarily designed to improve the balance of trade and to curb inflation, but also have an effect on their agricultural sectors.

Imports are restricted in several ways, the most common being the use of import licensing, exchange rate controls, and/or centralized purchasing. Import licenses are required for most bulk commodities in Brazil, Colombia, Mexico, and Venezuela. Ad valorem duties or specific tariffs are also used to limit imports and are in use in most countries of the region. Certain items, usually luxury goods, are directly or indirectly prohibited. Many farm

imports are controlled by granting monopoly importing authority to state trading agencies or selected firms. A prime example of this is Brazil, where the government imports all wheat.

Export taxes are levied on many of the major agricultural exports and are a major source of government revenue. In addition, export licenses are required for many commodities. Many countries use a combination of taxes, licenses, and foreign exchange controls to regulate exports. Brazil is a good example, taxing some of its major exports and requiring permission from the central bank to convert foreign exchange. Domestic and export taxes were major taxes on producers of soybeans and sorghum in Argentina and on beef producers in Brazil. Another example is Colombia, which taxes its coffee exports and requires licenses to export. Mexico establishes a quota for live cattle exports, has duties on some exports, and also had a minimum official export price for some commodities. A few governments have attempted to encourage exports by providing export rebate certificates giving exporters income tax credits. Colombia did this in the 1970s with cut flowers, and Brazil encouraged soybean meal exports in this way.

Price Supports. Most countries in the region usually have some kind of price support program for basic food commodities. These programs have had varying degrees of success because of limited financial resources.

Minimum price supports have been a feature of agricultural policies for Brazil and Mexico for the past four decades. The programs were intended to reduce uncertainties facing farmers and thereby encourage more investment and production. Recent ERS studies show the price support program in Mexico was the most important subsidy to all producers, with corn producers the most heavily subsidized. Price supports in Brazil have resulted in a major subsidy to domestic producers of wheat, while the program has been generally ineffective for soybean producers.

Research. Agricultural research is an indirect subsidy to most Latin American farmers, but Brazil was the only country where an attempt was made to measure it. Its relative importance was minor despite this country's unusually strong commitment to research. Most of the research in the region is devoted to "modern technology," such as fertilizer use and improved seeds. In that sense, the traditional subsistence agricultural sector has been neglected. A good example is Mexico, where most efforts were directed to irrigated areas and the inputs needed to expand production there, while the largest number of farmers and farms are in the more mountainous rainfed areas.

Input Policies. Credit has been another traditional means of attempting to stimulate agricultural output in Latin America. It was the most important component in Brazil and provided subsidies to farmers producing wheat, soybeans, poultry, corn, and rice. In Mexico, credit policy was also an important component of the overall subsidization of agriculture. Subsidies for fertilizer use in Mexico and freight subsidies for wheat in Brazil are important in each country.

Effects On Producers and Consumers

The combined effects of policies subsidizing or taxing producers in Brazil and Mexico in 1982-86 generally left farmers gaining from government intervention, although there is some question as to the distribution of the benefits (fig. 25). In Mexico, the percentage PSEs for corn, soybeans, and sorghum have been

Figure 25

Latin America: Commodity PSEs by country (1982-86 average)

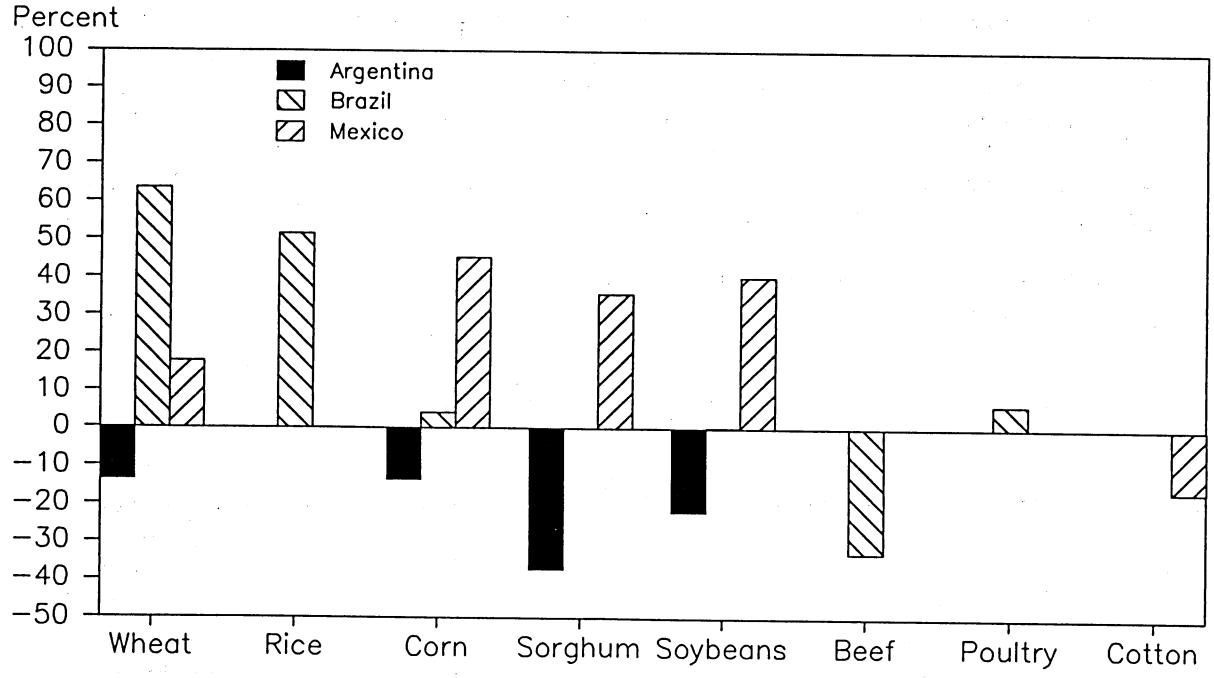
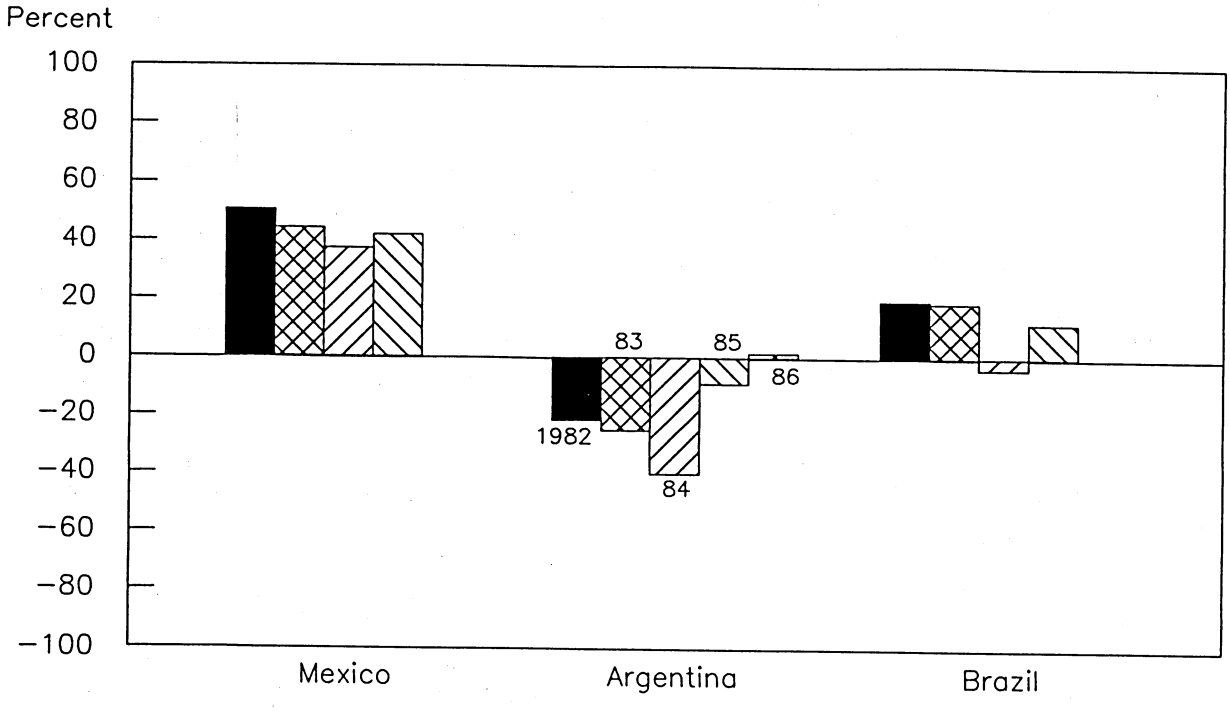


Figure 26

Latin America: Aggregate PSEs



trending upward, while subsidies for cotton (1982-83) switched to a tax in 1984-86. At the same time, the share of the transfer in relation to the total crop value has been changing. For corn, there was a sharp PSE drop from 1982, but then it leveled off at about 40 percent. There was a slight upward trend for soybeans and sorghum. Wheat had a mixed trend. A sharply declining trend for cotton resulted in a large tax (negative PSE) by 1986. When adjusted for exchange rate distortions, the positive Mexican PSEs increased, and the negative PSEs, with the exception of cotton, became positive. The Mexican PSEs reported here include updates and revisions of those published in (50).

The wheat subsidy in Brazil varied, but there was always a significant subsidy. The trends for corn and soybeans were also mixed. In some years, producers were taxed rather than subsidized. For Brazilian rice, there was a strong upward trend in support, but a declining trend for poultry. For beef, the downward trend of a subsidy switched to a strong tax in the mid-1980s.

In Argentina, the PSEs due to trade policies were highly negative, indicating a substantial tax on farmers (fig. 26). There was a downward trend in the negative PSEs since 1984 for wheat and soybeans, but a more mixed trend for corn and sorghum PSEs, which rose in 1985. All of the Argentine PSEs declined in 1986, reflecting a reduction in export taxes. The negative PSEs were moderated in all cases and offset in some by exchange rate policies which undervalued the Argentine currency.

Consumer subsidies were calculated only for Argentina. The CSEs generally showed trends opposite to those of the PSEs. Transfers to consumers in the rest of the Latin American region are likely also positive, given their goals of improving nutrition, stabilizing prices, and providing ample supplies.

Recent Changes, Possibilities for Liberalization

There appears to be a trend away from government intervention. Since joining GATT in August 1986, Mexico has begun to lower and/or do away with barriers to trade and domestic subsidies. Argentina has eliminated export taxes on all grains and reduced them on oilseeds. Another important example was Brazil's announcement in May, 1988 of the changes in a number of decree-laws which eliminate special import restraints and drop prior controls on the exports of some 3,000 products. However, the reforms still maintain a controversial "law of similars" which can block imports when comparable products are already produced in Brazil.

How strong or how durable these trend are is uncertain. Latin American governments have periodically freed agricultural trade before, only to return to controls as domestic economic problems and pressures rose. The current debt and general economic situation in the region, however, provide governments with incentives to do away with subsidies, particularly transfers from government budgets to producers. Offsetting this is a large urban population that is growing very rapidly and is generally quite poor. Stimulating agricultural production for export to earn foreign exchange in countries like Brazil risks displacing less efficient small farmers and increasing rural-urban migration. This, combined with the traditional cheap food for urban areas policy, indicates great difficulty in eliminating programs to reduce or maintain basic food prices.

If pushed, the region would most likely continue to move in the direction of reduced subsidies, but how far is not clear. Some of the first mechanisms to be removed would probably be the price support and credit programs. Improved economic conditions and debt relief would increase resistance to removing all the subsidies.

Sub-Saharan Africa

Carl Mabbs-Zeno

Sub-Saharan Africa includes a diversity of approaches to agriculture and trade policy. The World Bank's 1981 agenda for Accelerated Development in Sub-Saharan Africa called for a shift in development focus from building infrastructure and developing human resources to raising production levels (52). It recommended reduced barriers to international trade, open market valuation of currency, privatization of some parastatals, and more open domestic marketing systems. In contrast, the Organization of African Unity's 1980 "Lagos Plan of Action" targets self-sufficiency in foodstuffs using trade barriers and improved production technology (32). It relies on technology transfer and development like that of the green revolution in Latin America and Asia.

The food crisis during the 1980s in Sub-Saharan Africa has been attributed to a wide range of constraints that extend beyond the low level of agricultural technology blamed in earlier decades. Western governments and international organizations tended to regard local mismanagement and low production incentives as the underlying causes. African governments tended to identify declining terms of trade and natural factors like weather as causes of continuing poor agricultural performance. Neither group claimed to have a path out of the morass of war or corruption, which constrained implementation of agricultural policies where most needed.

In 1987, 22 of the 45 Sub-Saharan African countries were undertaking structural adjustment through the World Bank or the International Monetary Fund. The IMF has led the international pressure to amend African policies with conditional lending, but the World Bank and bilateral lending institutions have set similar conditions, most of which are directed toward decreased state control of exchange rates and agricultural marketing. Despite wide participation in structural adjustment, the trend toward conditionality continues to meet resistance. Opponents object to the reduced standard of living and the loss of sovereignty that comes with conditionality.

A typical measure to restructure African economies is to relax state control over foreign exchange. Since 1983, major currency devaluations have occurred in Equatorial Guinea, Ghana, Guinea-Bissau, Nigeria, Madagascar, Somalia, Sudan, Tanzania, Zaire, and Zambia. Sale or termination of parastatals is a central policy within restructuring. Parastatals had long been criticized by the World Bank and the IMF for their inefficiency. Nigeria, for example, abolished all six of its commodity marketing boards in 1986.

At least eight countries have ended state monopolies for marketing of particular agricultural goods since 1985 (Congo, Guinea Bissau, Malawi, Niger, Nigeria, Sierra Leone, Somalia, and Zambia). At least six countries have

undertaken programs to privatize state involvement in agriculture during the same period (Benin, Ghana, Guinea-Bissau, Nigeria, Sierra Leone, and Togo). These countries, along with those cited by the World Bank in 1981 as already privatizing (Mozambique, Senegal, Uganda, and Zaire), account for more than half the population of Sub-Saharan Africa.

Freer international trade and greater private control over agriculture have enhanced prospects for foreign investment in African agriculture. At least 12 countries are initiating changes to promote foreign private investment, including relaxing foreign exchange controls, offering tax holidays, and publicizing investment opportunities. In southern Africa, foreign investment also involves the issue of sanctions against South Africa, which have been expanded in recent years.

Consumer prices were raised on imports of subsidized food items in Guinea-Bissau, Sierra Leone, and Zambia, and in most food-importing countries that devalued their currency, as in Nigeria. The riots that accompanied price rises in Zambia in December 1986, like those earlier in North Africa, served as a warning that such policy changes would be difficult to implement.

Producer prices also were raised in many countries, mostly after 1983, to encourage import substitution of selected commodities. These measures represented a significant turnabout in the approach of socialist countries, such as Guinea-Bissau and Tanzania, which had not previously accepted higher producer prices as a legitimate tool for raising production. Higher prices for farm goods in Nigeria, Kenya, and other market-oriented economies demonstrated a renewed commitment to their rural populations.

The handling of agricultural input subsidies demonstrated whether a country was committed more strongly to direct farmer assistance or to market allocation of resources. Despite the prevailing rhetoric supporting market allocation and reduced government expenditure, few countries have cut subsidy rates significantly on strictly agricultural inputs such as fertilizer, pesticides, tractor hire, and research during the 1980s.

Many countries have reduced subsidies on petroleum since 1982, a reduction that affected costs of mechanized agricultural production and transport. For example, petroleum user prices were raised substantially in Ghana, Nigeria, and Sierra Leone.

As with input subsidies, export tax and tariff policies might reveal the relative value African governments give to active protection of agricultural producers vis-a-vis support for open market operations. But the results of these policies are ambiguous, with little pattern of change recognizable even in industrial commodities. Since export taxes and tariffs are focused so clearly on a single commodity, they are effective instruments for serving narrowly defined interests and thus may be chiefly used to appease agricultural or consumer groups who have rallied politically around the price of a single commodity.

Despite the general pattern consistent with the World Bank's liberalization objectives of 1981, several countries have not made major policy changes in recent years. Some countries were not directly involved in the food crisis of 1983-85 and thus had less motivation to question existing policies. Some, including Liberia and Cameroon, had already undertaken measures to promote freer trade and greater private sector involvement in agriculture. Some

countries, such as Ethiopia and Zimbabwe, continue to accept the efficacy of state-led rural development. Several states, such as Uganda and Mozambique, have wielded too little control to effect new policies. The major reason for not modifying agricultural policy, however, has been preoccupation with national security. Civil wars remain active in at least seven countries with a combined population representing about 30 percent of Sub-Saharan Africa.

Socialist countries also are taking steps to liberalize their economies despite ideological impediments. For example, Tanzania has relaxed government control and is experiencing some recovery from the precipitous decline in indicators of aggregate performance. However, neither the adjustments in Tanzania nor the recovery have been large enough to confirm a strong relationship between them.

Ethiopia did not accept major readjustment of the government's role in its economy. Ethiopia's 3-year plan beginning in 1986/87 aims at increased agricultural production toward food self-sufficiency. It relies on similar instruments and about the same percentage of the budget allotted to agricultural investment as in the past.

Zimbabwe retained its fundamental approach to rural development in the exceptionally productive years following the 1984 drought. Agricultural prices were extensively controlled, while record food levels were produced in 1986. A major drought reduced 1987 output, but adequate grain stocks were available to avert famine.

Many studies have estimated the levels of government intervention in specific sectors of Sub-Saharan economies using a variety of parameters. The most common measure is the nominal rate of protection which compares border prices to producer prices. A study of developing countries in the late 1970s and early 1980s found 29 cases in Sub-Saharan Africa where border prices of agricultural commodities were above prices received by farmers, 4 cases where they were about equal, and 2 cases where border prices were lower (table 20) (54). Thus a widespread pattern of producer taxation was suggested, including both import substitution and export commodities. The World Bank reported real protection rates in 13 Sub-Saharan countries for 1981-83 that rose 9 percent on the average from 1969-71 for cereals and fell 27 percent for export crops, indicating a shift in policy during the 1970s away from export crop production (54).

The ERS study of government intervention found that the net effect of agricultural policies in Nigeria from 1982-86 was to tax producers more than 40 percent of the farmgate value of wheat, corn, rice, sugar, cotton and cocoa (table 21), and about 50 percent from 1977-86. These crops, all imports but cocoa, constitute the major agricultural commodities traded internationally by Nigeria. Overvaluation of Nigerian currency was the dominant policy, overshadowing support given to producers via tariffs and via subsidies on fertilizer, credit, pesticides, and prices. The devaluation in October, 1986 dramatically increased the value of these crops to Nigerian producers by raising the price of imported substitutes.

The effect of Nigeria's policy on consumers was to subsidize 50 percent of retail value during 1982-86 for the studied commodities (table 22). Again, overvaluation accounted for most of the effect, so the 1986 devaluation raised retail prices on imported commodities regardless of changes in other policies.

Table 20--Nominal protection rates in Africa 1/

Rate	Commodity	Country
Less than one	Cocoa	Cameroon, Ivory Coast, Ghana, Togo
	Coffee	Cameroon, Ivory Coast, Tanzania, Togo
	Corn	Tanzania, Zambia
	Cotton	Burkina, Cameroon, Malawi, Mali, Senegal, Sudan, Togo
	Peanuts	Ivory Coast, Malawi, Mali, Senegal, Sudan, Zambia
	Rice	Cameroon, Ghana, Senegal, Tanzania
	Tobacco	Malawi, Tanzania
About equal to one	Corn	Ivory Coast
	Cotton	Ivory Coast
	Tea	Malawi
	Tobacco	Zambia
Greater than one	Corn	Malawi
	Sugar	Sudan

1/ Ratio of producer price to border price at official exchange rates.

Source: (54).

Table 21--Sub-Saharan Africa PSEs, 1982-86

Commodity	Nigeria	South Africa
	Percent	
Wheat	-19	18
Corn	3 1/	50
Rice	-43	NA
Sugar	-189	-12
Cotton	-136	NA
Cocoa	-297	NA

NA = Not available. 1/ White corn.

Source: (50).

Table 22--Sub-Saharan Africa CSEs, 1982-86

Commodity	Nigeria	South Africa
	Percent	
Wheat	3	22
Corn	202 1/	14
Rice	23	NA
Sugar	180	9
Cotton	187	NA

NA = not available. 1/ Yellow corn.

Source: (50).

The results for Nigeria demonstrate the increased incentives from devaluation to producers of traded crops. If lack of incentives had limited aggregate production, production may soon rise. The results also suggest that previous policies tended to favor wheat and corn producers and consumers of imports. Since these consumers were generally urban, the recent policy changes represent a shift toward support of rural people. Producers of selected commodities, such as wheat and rice, remain protected by a ban on imports. The staples of the rural Nigerian diet, millet, sorghum, cassava, and yam, continue to attract little direct policy intervention so the effect of these changes on the typical rural consumer is minor.

Policy effects on cotton producers in Sudan were measured for 1982-84, revealing a tax on producers of 11 percent of farmgate value. As in Nigeria, the most important policy was overvaluation. Without this policy, the effect of government policies would have been to subsidize nearly 40 percent of value to producers.

Exchange controls in South Africa were insufficient to result in a net tax on producers of wheat, corn, and sugar combined from 1982-86 (table 21). Instead, prices and credit support and constraints on sugar importers combined for a net subsidy of 29 percent of farmgate value. Consumption of three commodities together was subsidized by 15 percent of retail value, although individual crops differed strongly (table 22). Sugar consumption was actually taxed in some years because the cartel of sugar importers had constraints on import quantity, resulting in higher prices backed by the government. Low prices in 1985 and especially in 1986 yielded an average cost over the period of 12 percent of crop value to sugar producers. Wheat consumers were subsidized 22 percent of retail value, mainly as a result of price subsidies on bread. Corn, the largest crop consumed in South Africa, was subsidized by 14 percent of value to consumers and by 50 percent of value to producers, resulting in net costs to the marketing board. Government support for these three crops shifted steadily away from consumers over the study period.

The recent history of government involvement in commercial agriculture in Sub-Saharan Africa follows the Nigerian case with a pattern of net support for consumption and net taxation for production. Principal mechanisms of

government intervention have been associated with international trade through government trade monopolies, direct trade barriers, regulation of foreign investment, and foreign currency restrictions. Relatively low levels of support to producers of selected crops have come from input subsidies, research, and irrigation. Consumers tended to benefit from currency overvaluation and subsidized retail prices. Under pressure from international donors and lenders and from declining or disastrous domestic consumption levels, African governments have tended to accept more privatization in marketing.

Specific commodities often retain protection from market forces, but the effects of currency devaluation pervade many African economies. The success of the liberalization strategy cannot yet be demonstrated definitively, with early signals showing little evidence of strong improvement in African agriculture.

Middle East and North Africa

Michael Kurtzig, George Gardner, and John Parker

The Middle East and North Africa comprise 21 countries, most of which do not possess the agronomic capacity or environment to efficiently produce enough food to meet demand generated by population and income growth. As a result, the region heavily depends on food imports. The ability to import sufficient food to meet domestic requirements is largely a function of the health of the individual economies, which range from oil-rich Saudi Arabia to countries heavily dependent on food import subsidies to meet food requirements, such as Egypt.

In many countries, agriculture is an important sector of the economy, plays a major role in trade and balance of payments, and employs a large sector of the labor force. Turkey, Jordan, and Syria are examples. In other countries, agriculture is comparatively small, but plays an important role in the country's overall economy; Saudi Arabia and Iraq are examples. For the third set, agriculture is of a subsistence type, contributing a very small portion to GNP. Large subsidies recently spurred some commercial agribusiness, mostly poultry projects using imported feed. Kuwait, Qatar, Oman, Bahrain, and the United Arab Emirates are in this category. In virtually all countries, however, domestic output does not meet growing needs.

During the last 15 years, commodity imports have become critical to the food security programs of these countries. Imports comprise 3-75 percent of the food consumed. In Egypt, for example, food imports comprise over 50 percent of consumption and average over $4 billion per year. In such circumstances, government intervention has played a critical role. In most countries, the government has implemented an extensive system of consumer and producer subsidies. Longstanding consumer subsidies constitute an important part of the social fabric, forming a safety net for large and politically important sectors of the population.

A major concern of policy adjustment and reform is its effect on producers and consumers. Governments have had to practice a fine balancing act in order to support producers and subsidize consumers, while simultaneously avoiding overburdening government budgets.

Food security strategies are at the forefront of national development schemes. A typical policy goal is the provision of an uninterrupted supply of cheap foodstuffs to low-income, but politically important, sectors of the population. North African nations generally attempt to insure uninterrupted food supplies by signing long-term, bilateral trade protocols with politically friendly nations. National governments are generally reluctant to change policies which maintain the various subsidy systems, since to do so would jeopardize the safety net for much of the population.

As a result, both agricultural production and trade are characterized by extensive central government intervention aimed at domestic self-sufficiency in wheat. In some countries, self-sufficiency has been reached and some are even exporting. Turkey and Saudi Arabia are good examples. Because of resource limitations, the North African nations are likely to retain this policy goal in the foreseeable future. The seemingly insurmountable task each government has undertaken is to squeeze as much output as they can from their wheat sectors while maintaining low prices for the consumers.

Primary Policy Mechanisms

Governments use a broad range of policy tools to pursue their agricultural goals, including: procurement price fixing, support prices, tax rebates, acreage limitations and allotments, and credits at various stages of the output cycle. Subsidies are provided for improvement of marketing and distribution facilities and refrigeration, and for technical assistance and low-interest credit. Governments also encourage improvement of cultivation practices through extension, research, and education with such programs as the use of certified seed, double cropping, growing crops under glass and plastic houses, trickle irrigation, growth hormones, refined animal feeds, upgraded genetic quality of animals, and diversification of export products.

Another typical policy mechanism is the diversification of food suppliers so that excessive commercial dependency on a single trading partner does not develop into political dependency. Still other nations cultivate trade protocols with the European nation which occupied them during their colonial eras.

Some countries set artificially low domestic procurement prices for export crops thereby earning scarce foreign exchange for the central government. Producers in Egypt, for example, are forced to grow cotton in order to get government-provided inputs which are used for other crops as well. Other methods include a government monopoly on the import (or export) of strategic crops, government subsidization of agricultural production inputs such as fertilizer and insecticides, complex exchange rate regulations and multiple exchange rates which favor the export (or import) of specific commodities, and the actual banning of the import of certain foodstuffs deemed to be luxury items by the central government.

Agricultural trade policies are many and varied, including promoting value-added exports while discouraging those of raw commodities. In Turkey, for example, the main tools employed are tax rebates, used to support exports of value-added products, and export taxes or deposits applied on raw commodity exports such as pulses, tobacco, cotton, filberts, and dried fruit. However, in line with Turkey's commitment to conform to the GATT subsidy code, tax rebates (that is, export subsidies) declined sharply in 1985. In addition to direct incentives to trade, Turkey has devalued its currency sharply in recent

years at rates far exceeding domestic inflation rates. This "real" currency devaluation has improved the export price competitiveness of all exported products.

Saudi Arabia pursues its production goals with policies including free producer credit, free land, input subsidies, the purchase and transport of imported inputs such as irrigation equipment, seed, and breeding stock, subsidies for the storage and processing of farm products, and price supports. The centerpiece is the wheat procurement program which gained the country international notoriety. It paid producers $1,000 per ton for domestic wheat (the price was reduced to $570 in late 1984) when the world price was less than one-sixth that value.

The Saudi government generally favors a liberal trade policy. While it licenses all imports, the quantity is not limited to any appreciable extent. Foreign exchange is not controlled, and tariffs, where they exist, are mostly low to moderate. However, the government requires that all imports be channelled through Saudi agencies or individuals. This requirement is part of a wide-ranging policy designed to insure the development of a strong private sector and insure domestic control of the economy. Generous subsidies are provided to these importing firms, although some were recently reduced. Nontariff barriers to trade have been increasing rapidly--especially concerning labeling and shelf life--although they are more significant to potential investors than to U.S. agricultural exporters because of the strict regulations on joint ventures such as food processing. Recent regulations are designed to make all foods safe for Saudi consumers and to coerce foreign suppliers to ship in bulk, thereby assuring that the products are finished at Saudi facilities.

Effects on Producers, Consumers

One of the major concerns of policy adjustment and reform is its effect on producers and consumers. In both instances, a fine balancing act has been essential in order to support producers and subsidize consumers, while simultaneously avoiding overburdening government budgets. Consumer and producer subsidies are critical policy and structural production determinants. In countries unable to achieve food self-sufficiency, producer subsidies are often used both to encourage output and to redistribute income.

Consumers in the region are subsidized through government intervention, with wide variations by country and commodity. But in each case there are fundamental policies that governments try to achieve. In countries where governments have sought to lower budgetary costs by reducing consumer subsidies, the result has often been food riots and reduced political support by the urban sector. Morocco, Tunisia, and Egypt are cases in point. Aware that such actions portend political problems, governments often raised consumer subsidy levels. Iraq, for example, stresses low fixed prices for basic foods through policies which essentially focus on providing low retail food prices, input subsidies, and higher procurement prices.

However, government-imposed restrictions and controls often inhibit the most efficient economic growth. While many policies purport to assist or protect domestic producers, many policies in fact are biased in favor of urban consumers and do not provide sufficient producer incentives to greatly increase output. In addition, protectionist policies, which encourage import substitution without regard for the country's comparative advantage, have in

some cases led to resource misallocations and adversely affected a country's long-term economic growth. On the whole, central government intervention has woefully failed to reduce or stem the growth of the food gap between domestic supply and consumption. In Egypt, for example, the gap has continued to widen even as dependence on a few key suppliers has continued to grow.

As the cost of intervention has become more apparent, governments have increasingly emphasized the role of the private sector. In some countries, divestiture policies and programs have been promulgated in both the agricultural and nonagricultural sectors. In Turkey, for example, the Bosphorus bridge connecting Asia and Europe has been privatized with shares traded on the stock exchange. In the agricultural sector, privatization is progressing in the tobacco industry, fruit and vegetable co-ops, and the dairy industry.

By privatizing, the government aims to reduce the budgetary drain of subsidizing unprofitable industries, to permit free market forces to interact, to remove protectionist measures, and to make industries more competitive and cost/price conscious.

In North African countries, governments' major policies over a number of years have been the reduction of imports, resulting in shortages of certain products such as coffee, sugar, butter, cheese, milk products, and cooking oil. Under the difficult economic circumstances, the government stresses reduction of waste, more efficient management of state enterprises and possible dissolution of enterprises consistently showing a loss, better maintenance of equipment, export promotion, and more private initiative.

Recent Changes

As incomes and populations grow, and as budget deficits and subsidy costs rise, governments are reevaluating their agricultural policies and goals. As a result, food and agriculture have gained in importance, and countries are focused more on the welfare of their food producing sectors. For the first time in recent memory, agricultural sectors have claimed a substantial portion of development funds for overall growth, marketing and distribution infrastructure, irrigation and water use, subsidies, and price and trade support.

Recent developments have seen Egypt reduce forced procurement from 13 crops to 3 (rice, cotton, and sugarcane), and procurement prices are now announced prior to planting season. While procurement prices have been raised significantly in local currency terms, they still lag world prices. In 1987, the private sector was given a role in food security imports, previously the sole domain of government. Private firms were allowed to import corn, but low profit margin ceilings discouraged them from participating on a large scale. Discussions continue of seriously reforming the food rationing system to target only the lower income groups. Another action was the lowering of mandatory rice procurement from 50 percent to 25 percent for the 1987 crop, and slight decreases in input subsidies.

In Algeria, retail prices have been heavily subsidized, but subsidies are being gradually reduced, with moderate price hikes implemented in 1983, 1984, and 1985. Algeria is moving toward greater reliance on market forces for resource allocation. In late 1987, the government announced an ambitious policy initiative to liberalize agriculture and other sectors of the Algerian

economy. In agriculture, the policy aims at slowly dismantling large state-owned farms into privately operated units, which the government hopes will produce food more efficiently.

Since 1984, Turkey has greatly liberalized and simplified its trade policies and regulations in line with its overall market-oriented approach. In agriculture, import liberalization has mostly entailed removing import bans and reducing duties on bulk commodities, moves primarily intended to control inflation and support the export of value-added products. Tariffs were cut primarily on items used for further processing and on products in which Turkey is not self-sufficient.

Until the early 1980s, Turkish agricultural products were primarily exported in their raw state and included cotton, tobacco, raisins, and livestock products. Under a new policy, which sought to add value to the product, a substantial portion of Turkey's agricultural exports are processed, with a commensurate decline in raw commodity exports.

Bulk commodity export taxes (such as for cotton and tobacco) were also reduced in 1985 to promote exports. Moreover, on an as-needed basis, raw commodity exports continue to receive tax rebates. Export policies for fresh fruits are a case in point. Although there are no support policies or minimum export prices for fresh fruits, export subsidies, in the form of export rebates, are often paid by the government to encourage exports. In July 1985, the export subsidy rate was increased to 6 percent to reverse a decline in fresh fruit exports. To encourage production of exportable fruit, the government has also been helping farmers, packers, and exporters with technical assistance and low-interest credit through the Agricultural Bank of Turkey. The World Bank has provided special loans to Turkish fresh fruit growers and processors under two 5-year World Bank projects.

A broadening of the influence of market forces has been evident in Tunisia. The country has relied on government mechanisms to stimulate output of such items as poultry and citrus products. Nevertheless, the government is continuing its support for a medium- to long-term policy, introduced in 1986, giving a greater role to market forces. This is intended to provide gradual incentives for the production of certain import substitutes such as food grains, meat, and milk, and to increase output of export crops.

Saudi Arabia has made several agricultural policy changes since 1985, but they have resulted more from budgetary constraints (as oil income has declined to a fraction of its 1981 peak) than from a liberalization policy thrust. Although the government procurement price for wheat was reduced from $1,000 to $570 per ton, the Kingdom still has a wheat surplus, and is annually exporting nearly 1.5 million tons at prices which recover only a fraction of the production and storage costs.

In 1987, after a lucrative barley import subsidy had cast Saudi Arabia into the role of the world's largest barley importer, the government import subsidy was reduced significantly. Furthermore, a barley production subsidy was put in place, but has not enticed farmers to switch from wheat production because the subsidy payment is relatively low ($267 per ton) and barley yields are much lower than wheat yields.

Liberalization Possibilities

In some countries, import liberalization programs continue and presage further freeing of trade. Turkish government decisions in 1988 relative to imports suggest further liberalization allowing importation of almost anything. The number of items subject to government permits has been reduced to 33. In 1984, the list of banned goods consisted of over 200 items and some 1,000 items were subject to licensing. There is no agricultural item that requires an import permit. A significant change is that the import regime announced every January will henceforth remain permanent in principle and only certain amendments will be made on items and surcharges as necessary.

In the case of Saudi Arabia during the mid-1980s, the government's policy goal has shifted from one of rapid development of physical infrastructure to industrial diversification and human capital development. This policy shift is evident in the fourth development plan (1985-90) which emphasizes an increasing role for the private sector in industry and a continuing government role in the agricultural sector. The policy shift was due largely to the government's foresight in recognizing the inherent dangers of relying on a single commodity--oil--to drive the economy.

The nations of the Middle East and North Africa will likely continue to maintain strong consumer and producer subsidies, in order to maintain a certain standard of living in urban areas while simultaneously providing sufficient incentives for producers to continue expanding output. In some countries, trade liberalization has come quickly and at some cost to the domestic economy. In others, protectionism is still an important factor in policy consideration, as is the maintenance of political stability, particularly in large, politically active urban areas. The decade of high oil revenues provided a massive infusion of funds to raise the standard of living, provide producer incentives, and raise expectations. Such standards and such expectations are unlikely to be diminished and that will determine much of the policy changes, and lack thereof, in the decade of the 1990s.

USSR, China, and Eastern Europe

Kenneth R. Gray and Frederick W. Crook

GATT negotiations to liberalize agricultural trade concern most directly those countries whose border measures and internal policy interventions have been framed in the context of market economies. Although some of the centrally planned economies are members of the GATT, or aspire to be, most of them stand largely outside the periphery of present trade negotiations. Still, the centrally planned nations are major participants in world agricultural trade and their response to the price changes the GATT negotiations might bring about would be important. Furthermore there is a movement away from central planning, entirely apart from, but similar in spirit to, proposals to the GATT to reduce state involvement in agriculture. This movement does not involve just reducing interference in markets, but the creation or re-establishment of markets where they now hardly exist. China has already enjoyed a decade of success moving in this direction. If China can continue along this path and if the Soviet Union and Eastern Europe can solve the difficult problems which have impeded past reform attempts, then the changes to be wrought upon world agricultural trade may be large.

European centrally planned economies have one-tenth of the world's population and in 1985-86 they accounted for just over 10 percent of world agricultural imports and about 4 percent of total exports. European and Asian centrally planned economies together have one-third of the world's population and, in 1985-86, had 12.4 percent of total agricultural imports and 7.2 percent of exports.

No individual commodity PSEs and CSEs are available for the centrally planned economies. Data on Soviet and Chinese state budgetary subsidies by category are tabled in this section. These data are published sporadically, are poorly explained, and may not be the same as subsidies with similar names elsewhere in this report. Large subsidy amounts are related to dual pricing systems where, for instance, farms receive higher prices for basic staple foods than consumers pay, or pay less for inputs than the producers of the inputs receive. Subsidies came about because of state interest in promoting agricultural production and stable prices for consumers. But, as in many market economies, growing budget subsidies create pressure for improved efficiency in agricultural production and trade.

State trading and currency inconvertibility isolate centrally planned economy producers and users of traded, or potentially traded, goods from the rest of the world. Trade in each commodity has traditionally been monopolized by a specialized foreign trade organization (FTO) subordinated to a ministry of foreign trade. These FTOs are not very responsive to the needs of domestic enterprises. In addition, no currency of any centrally planned economy is convertible. Unlike the nonconvertible currencies of market economies, their currencies also lack full "goods convertibility." This means that it cannot be spent freely internally because of the planned domestic allocation and the lack of markets for goods.

Reciprocity and GATT Membership

East Germany and Albania have no affiliation with the GATT. Czechoslovakia, Hungary, Poland, Romania, and Yugoslavia have been full members of the GATT for some time. Bulgaria and China have observer status. China is seeking active GATT membership in the LDC category. The USSR, which joined the Multi-Fibre Agreement last year, is preparing a strategy to enter GATT.

Hungary, in an advanced stage of reform and net exporter of farm commodities, supports many aspects of the trade liberalization proposals. In September, 1988, Hungary will host a meeting of the Cairns Group, of which it is a member.

The centrally planned economies hope to get most favored nation (MFN) status as a benefit of GATT membership (although for human rights violations the United States has unilaterally withheld MFN from centrally planned nations which are members of GATT). A major economic problem is how they can reciprocate when multilateral negotiations call for lower trade barriers. Their "import quotas" are not visible barriers announced by the government, but are determined in state planning out of sight. Any tariff system exists principally as an accounting means to police foreign trade operatives. The fictitious nature of their tariff concessions was illustrated two decades ago when UNCTAD II called for the preferential reduction of tariffs against the manufactured products of the developing countries. The Soviet Union announced immediately that it was eliminating a previously unknown class of tariffs which the state paid to itself on imports that it planned to make in any case. Now there are reports that the USSR is readying a tariff schedule which can be negotiated down in the event of Soviet admission to GATT.

The problem of reciprocity was addressed in the case of Poland which became a full member of the GATT in 1967. Poland was required (though it later failed) to increase the value of its overall imports from GATT members by 7 percent a year. Romania, which became a full member in 1971, was supposed to increase imports from GATT nations by at least as much as its total imports (25).

The system by which foreign trade is conducted has changed in a few centrally planned economies very recently. However, only in Yugoslavia, now a quasi-market economy, is agricultural trade restricted as it is in market economies through tariffs and quotas as well as through currency allocation. Changes in these instruments are not fictitious, but truly influence export and import decisions. As it moved away from central planning, Yugoslavia drew close to GATT. It became an associate member in 1962 when it adopted a tariff system, abolished multiple exchange rates, and simplified trade controls. It became a full member in 1965, when reforms were introduced to reduce further the direct intervention of the state in the economy.

Elsewhere, pure state monopoly trading has become somewhat decentralized. The development started in some East European nations in the early 1980s and has just begun in China and the USSR. In some cases, production enterprises are allowed permission to deal directly on foreign markets, or at least are able to choose among FTOs which now compete to some extent. However, although the number of authorized enterprises has proliferated, this development has occurred principally to facilitate exports to ease the hard currency shortages that confront these countries and to reduce the isolation of socialist firms from world developments in technology. Even in Hungary, which has gone furthest among the Council of Mutual Economic Assistance (CMEA) countries, most trade still passes through FTOs. Furthermore, developments there have taken place mainly in the industrial sector. In all the centrally planned economies, most agricultural trade remains in the hands of a small number of monopoly FTOs (8).

Movement Toward Markets

A number of centrally planned economies are in the process of difficult internal reform of their economic systems. Their government agencies traditionally create plans and hand them down to farms. These plans include many mandatory targets for the sale or production of individual commodities like grain and potatoes, expressed in physical quantities like tons, and specifying deliveries to individual farms of certain industrial inputs like fertilizers and machinery. Government agencies also draw up plans to distribute quantities of food among regions, cities, and even among persons directly in those instances when formal ration coupons are used. These plans often differ greatly from the wants of farms and consumers.

Many would say that planning is the wrong word. The state's central agencies allocate too much, in too much detail, with too little information. However, for government to decentralize the allocation of so much detail requires more efficient prices if even worse chaos is to be avoided. State agencies plan prices as well as quantities and also pass them down to farms and consumers. The problem with prices is more basic than in market economies, where prices are often merely distorted: centrally planned prices are overwhelmingly disequilibrium prices. Planned prices are usually based too much upon Marxist cost of production and too little upon demand factors, and they are changed too infrequently. Such prices contribute to ubiquitous shortages. Thus the state is forced, because of excess demand, to plan the allocation of quantities.

Because of inadequate prices, the state has often not been able to delegate quantity decisions back to the farm even when it has wanted to. For instance, in the early 1970s Soviet agricultural authorities again sought to leave minor crops out of mandatory sales plans. Among other shortcomings, one well publicized result was that buckwheat, a Russian cultural food staple, was not produced. It became necessary to assign mandatory plans to farms to return buckwheat groats to the Russian table. Whether price adjustments are trusted to correct such imbalances or not is the first hurdle in transforming the intent to decentralize decisionmaking authority to actual practice.

Mandatory farm sales plans are no longer in use in a number of centrally planned economies, particularly Hungary, and also Yugoslavia and Poland where private sectors predominate. China has eliminated state plans for a number of commodities and is beginning to experiment with free marketing of grain. There is a recent tendency for centrally planned economies to raise input prices and increase the efficiency of their use. However, rationalization of input markets generally remains a major stumbling block for farm development. This is particularly true of Soviet agriculture, which is highly dependent upon off-farm inputs. Advances in farm productivity in China were made through changes in farm incentives. The development of relatively free markets for many off-farm inputs helped boost output, but improving input markets nevertheless remains a problem.

Response to World Trade Liberalization

Without internal economic reform the capacity of centrally planned agricultural trade to respond to changes in world prices, such as might occur with widespread international trade liberalization, will remain questionable. It is internal economic order, more than state trading or the lack of convertibility with other currencies, which is the stumbling block.

Are the centrally planned economies responsive to world commodity prices? They are in certain ways, but less certainly so in others. Their commodity traders seek the best prices among competitors, and are sometimes price conscious in the sense of being low-price buyers with respect to quality; for example, in taking low-quality butter from EC intervention stocks. This is true particularly given persistently tight hard currency earnings and many alternative claimants, like technology, for imports from hard currency areas (9). On the other hand, the internal system of allocation and controlled prices isolates consumers and producers from world prices. As long as markets play only a limited internal role, policymakers will be poorly informed about the tradeoffs that can be made by consumers and producers and hampered in knowing how they should respond to world price changes. The crucial policy decisions of the relatively small number of persons who decide trade plans and allocate foreign exchange will then likely remain difficult for outsiders to forecast.

Soviet Agricultural and Trade Reform

An interesting feature of current Soviet discussions of agricultural management is the revival of the memory of Alexander Chayanov. Chayanov was a world-renowned agricultural economist who founded the major Russian agricultural economics research institute in the 1920s and was later executed, in part for not supporting Stalin's forced collectivization of farming. Chayanov's vision for early Soviet agriculture was eclectic, one of some large and some small family-type farms with a supporting network of voluntary

marketing and service cooperatives. Instead, there developed a cumbersome system of state orders which stifled farm initiative and became increasingly inappropriate in modern conditions. Soviet writers are today publishing openly the view that collectivization was a mistake. Many would like to return to the road from which Soviet agriculture departed in 1929.

Return passage, although advocated, is far from certain. An attempt to decentralize agriculture failed in the 1960s. Three years into reformer Mikhail Gorbachev's tenure as party general secretary, farm costs and state budgetary subsidies for food, which rose inordinately for two decades under Leonid Brezhnev, continue to rise. Internal shortages persist. In 1987, gross agricultural output again stagnated, after spurting impressively by 5.3 percent in 1986. In 1988, agricultural imports will likely rise by 5 percent from 1987's $16 billion, down from the $19 billion average of the first half of the 1980s, but only because of lower world grain prices.

However, agricultural and general economic policies continue to be in flux. The state wants to orient farms to seek lower costs and higher profits by making them less eligible for financial bailout. Along with increased responsibilities, certain limited freedoms and incentives have been expanded and more are sought. Small groups of farmworkers, including family units, some of them quite independent of former controls, are contracting to do work for the collective and state farms. Some have had startling success. But Gorbachev's hope to modernize Soviet agriculture still lacks a number of prerequisites. Among these, one proved to be the downfall of similar reform in the 1960s: a much clearer understanding by the authorities of the role prices play in market-oriented agriculture. Pursuing profits makes sense socially only if prices convey good information about wants and scarcities. As it is now, state plans, derided as they are for overriding farm initiative, are a mandatory evil, because the present system of subsidized and fixed prices gives farms such distorted signals that without plans there would be even larger shortages and surpluses.

Budget Subsidies: Reflections of Soviet Agricultural Priorities

The deficiencies of the economic system became increasingly obvious as more resources were devoted to farming. When the new Brezhnev-Kosygin government began a major program in 1965 to greatly increase farm wages and investment, while keeping retail prices for consumers unchanged, farm investment increased from roughly 16 percent of the nation's total investment in 1950-65 to 28 percent in 1981-85. However, nearly stagnant farm production and falling productivity in the face of increased investment had become an embarrassment to the Brezhnev farm program.

The various food and farm subsidies which are now under question (for which available data are presented in table 23) are largely the result of Brezhnev's policies. For instance, beginning in 1967, a state budgetary subsidy began making up the difference when the state raised prices industry received for machinery and mineral fertilizers and the prices farms paid were kept unchanged. When the price of gasoline was doubled for nonfarm users in 1978, prices for farm uses stayed the same, and so forth. In recent years, for instance, a combine costing the state 9,500 rubles to produce has been sold to farms for 6,100 rubles; phosphate fertilizers costing 260 rubles have been supplied at 119 rubles per ton. Subsidies for farm machinery and mineral fertilizer totaled 3.0 and 2.6 billion rubles in 1987. The state provides land improvement (drainage, irrigation, liming) for farms without payment.

Table 23--Soviet categories of state subsidies for agriculture

Item	Annual average								
	1961-65	1966-70	1971-75	1976-80	1981	1982	1983	1984	1985
	Billion rubles								
Direct subsidies	7.3	8.7	15.4	24.2	NA	35.8	37.0	NA	NA
Of which--									
State expenditures for irrigation, drainage, soil treatment	.9 1/	2.1 1/	4.4 1/	5.5 1/	7.8 2/	9.9	7.6	8.2 3/	8.3 3/
Retail price subsidies	3.5 4/	7.8	17.2	24.2	NA	29.9	54.6 5/	NA	NA
Input subsidies 6/	0	.5	1.4	2.8	NA	8.2	4.2	NA	NA
Total subsidies	10.8	17.0	34.0	51.2	NA	73.9	95.8	NA	103 7/
Increase of long run bank credit	1.0	1.6	3.0	4.0	NA	3.3	2.5	NA	NA
Long-term credit forgiven by State	NA	NA	NA	NA	NA	2.4	2.4	2.4	2.5
Losses on imports	NA	NA	NA	NA	NA	2.1	NA	NA	NA

NA = Not available. 1/ Only new irrigation and drainage construction. 2/ Includes 0.2 billion rubles from collective farms funds. 3/ Estimated. 4/ Only for 1965. 5/ Including bonuses for low-profit and unprofitable farms (9.4 billion rubles) introduced as of 1-1-1983. 6/ Including mineral fertilizer, machinery, and, for 1978-1982, gasoline. 7/ For 1986. (Semyonov, Ekon. Sel. Khoz., Nov. 9, 1987, p. 31.)

The state routinely forgave bank loans taken out by farms for investment and to pay wages. Producers' subsidies of all kinds were on the order of perhaps 45 billion rubles in 1987.

While farm input subsidies are large, retail food price subsidies are even larger. An estimated 58 billion rubles ($99 billion) is to be spent on retail subsidies for food this year. The bulk of this is for meat and dairy products. Retail subsidies are necessitated because state retail prices have been kept stable in the face of increasing farm costs. As farm costs have gone up, state-controlled farm prices have also increased, and additional budgetary outlays have been required to subsidize the prices of raw materials so that food manufacturers can remain profitable. For instance, the retail price paid for beef, which has not changed officially since 1962, now accounts for only one-third of the cost of providing beef in state stores.

Problems Caused by Budgetary Subsidies

This system of subsidies has created various distortions. For instance, easy credit and prices fixed at low inflexible levels have caused shortages of certain machinery, chemicals, and construction materials. Shortages have in turn caused the poor allocation, waste, and quality deterioration that occur in any price control situation.

Much of the apparent shortage of meat is due not so much to failures in production as to demand factors, that is, to the subsidies which have allowed prices to remain fixed while people's incomes have risen. Despite the persistence of queues, per capita consumption of red meat and poultry has actually increased, from 41 kg in 1965 to 63 kg (carcass weight) in 1987. Data now show Soviet per capita meat consumption to be only 10-20 percent less than in Sweden and the United Kingdom.

Soviet Subsidy Reform Depends on Efficient Pricing

The subsidy picture is changing. In a speech last year, the general secretary boasted that orders for farm machinery had declined as a result of the new financial discipline. Subsidies for mineral fertilizer and farm machinery are being eliminated as of the first of this year, and dual input prices for all farm inputs are to be eliminated after 1991. The mere fact that these developments are put forward as positive developments, tied to reducing farm cost and pressuring industry to produce better quality equipment, represents a radical change in thinking.

The state plans to increase retail food prices and decrease the retail subsidies, also by 1991. The retail food subsidy is large. It equals about 15 percent of the state budget and one-third of total expenditure in state-run stores, or an average of 200 rubles per person (about 1 month's pay). In order for retail price increases to be feasible politically, this revision must be accompanied by a scheme to compensate those on fixed salaries and pensions. But the change is felt to be needed. Low food prices must be paid for by higher prices on other consumer goods, which are highly taxed. These goods include shoes, clothing, autos, and electronics products. The tax on liquor is still a major source of state revenue, although it has declined greatly as sales have fallen from Gorbachev's anti-alcohol campaign.

The potential for enlarging the role of family farming is quite exciting. But attempts have been made before to let small groups of farmers or farm

families benefit from the fruits of their toil with minimal government edict (most recently in the 1960s). These attempts failed largely because of inefficient taxes and prices. A fundamental obstacle to decentralization has been the absence of good landlord-tenant arrangements. One problem is that, according to practice and the current Soviet constitution, the state owns the land but is prohibited from directly charging farms rent for it. Instead, rent has been charged indirectly and inefficiently by giving farms hard and detailed targets for commodities to be delivered to the state at low prices. Land rent is also taxed by establishing purchase prices for groups of farms on a cost-plus basis. Farms and regions with high production costs receive high prices, and farms with low costs receive low prices. This is a method that discourages production where it is efficient and encourages production where it is not efficient.

The model collective farm charter which was proposed for discussion in January allows land to be rented to farmers, affirming what has already been happening on a more experimental basis. Payment can vary with land quality, potentially beginning the process of freeing farm prices to guide efficient farm and regional specialization, revealing comparative advantage, and eventually affecting foreign trade decisionmaking.

Impact of Reform on Soviet Trade

Present developments, including those affecting farm subsidies, could eventually have a major effect on Soviet trade. But what will turn up on a future list of commodity exports and imports is hard to forecast. On one hand, the elimination of input subsidies would raise the calculated cost of production, as would the inclusion of land rent in farm costs. This would make food imports look more attractive than domestic production, particularly from regions which are most inhospitable for farming but where the true high cost of production is now obscured.

However, it is more likely that were the management of agriculture really improved and efficiency significantly increased, Soviet imports would be reduced. This would happen if financial discipline reduced waste, and if prices helped to allocate resources, determine farm specialization, and promote other desired goals. Significant retail price increases that would check the growth of demand for meat would also tend to reduce imports of meat and feed grains. However, in all this, different commodities would be affected differently. For example, an efficient liberalized agricultural economy might well articulate the pent-up demand for feed protein, and increase soy and soymeal imports.

China's Economic Reforms and Trade Liberalization

China's economic reforms, begun in 1978, had a dramatic effect on agricultural production and trade. Similiar effects are likely as China's leaders move to implement price reforms in urban and rural areas. The price reforms plus reforms of the banking, legal, and foreign trade systems likely will promote foreign trade activity.

Even before the 1978 economic reforms, China had resolved to create a modern socialist economic system that would be relatively self-sufficient, and ensure stable prices and full employment while also raising the living standard. During the 1949-78 period, China's authorities had developed an economic system characterized by state ownership of the means of production. Mobility

of land, labor, capital, and technology was limited by administrative decree. Central planners used physical output targets and control of input supplies to guide managers to produce the planned quantities of goods and services. Government agencies used an elaborate rationing system to distribute grain, edible oils, and cotton cloth to consumers and controlled wholesale and retail networks in the distribution of other goods. Government-owned foreign trade corporations were established to control the import and export of goods and technology and to insulate the domestic economy from international economic activity. Authorities established import and export license regulations, tariff schedules, and regulations governing use of foreign exchange, all with the purpose of controlling trade rather than generating revenues.

In the agricultural sector, most farm families were organized in production teams, which behaved as basic farm production units. Teams owned the land and capital equipment, accounted for profits or losses, and distributed income to team members. Commune-level institutions directed team decisionmaking by issuing production targets and purchase orders, controlling inputs, issuing credit, and providing extension advice and social services. Retail and purchase prices for farm goods were fixed by the state. Teams and communes were encouraged to be self-sufficient in supplying their own food, fuel, and fiber requirements.

China's 1978 Economic Reform

In 1978, China's leaders initiated major economic reforms to improve the allocative efficiency of the economy, thereby hastening modernization, economic growth, and gains in living standards. Efforts were made to decentralize decisionmaking and increase the influence of markets in making production and investment decisions. Authorities limited the number of goods under the purview of central planners, expanding the number produced and distributed for markets. Administrative decrees loosened restrictions on the mobility of managers, labor, capital, and technology. The government reduced its participation in purchasing, transferring, processing, and retailing food and textiles. The principle of self-reliance was partially abandoned and government agencies made a concerted effort to increase foreign contacts and trade. China successfully applied for admission to the World Bank and the Asian Development Bank. Joint ventures with companies from foreign countries increased dramatically.

The reforms have had a dramatic effect on China's foreign trade. Total trade turnover expanded from $14.8 billion in 1977 to $73.9 billion in 1986, an increase of nearly 400 percent. Over the same period, imports increased 495 percent from $7.2 billion to $42.9 billion, compared with exports which also increased impressively, though at a slower pace of 308 percent from $7.6 billion to $30.9 billion.

The reforms have been most dramatic for the agricultural sector. The commune system with its brigades and teams was dismantled. Economic cooperatives were formed which owned the means of production. Individual households contracted with these economic cooperatives to farm specific plots of land. Rural free markets were restored and the government reduced its contracted purchases of grain. Economic decisions in farm production units were allowed to be more heavily influenced by market forces. Whereas before 1978 communes limited the mobility of factors of production and private initiative, after 1978 production specialization proceeded at a rapid rate and efficiency improved. Crop and livestock output soared and rural industrial output expanded

dramatically. Per capita incomes rose rapidly, and consumers sought better quality food and clothes rather than just filling basic requirements.

How China's Reforms Affected Agricultural Trade

The reforms had an important but less dramatic effect on China's agricultural trade. Agriculture's share of total trade turnover declined from 32.7 percent in 1977 to only 12 percent in 1986. Total agricultural trade turnover in that period expanded by only 82 percent from $4.8 billion to $8.8 billion. Agricultural imports rose only 30 percent from $2.1 billion in 1977 to $2.7 billion in 1986. Agricultural exports rose much faster, from $2.7 billion to $6.1 billion, an increase of 123 percent.

The level of government intervention in China's rural economy is less now than it was 10 years ago. Yet important mechanisms for controlling economic behavior remain. Government purchasing agents continue to be responsible for bringing the bulk of grain and edible oils from the farm to urban consumers. The government continues to be the monopsony buyer for raw cotton. Control of the manufacture and distribution of fertilizer, farm machinery, and farm chemicals remains with the government. Local government and party leaders continue to have an important influence on farm production unit decisions. State expenditure in support of agriculture continues at just over 10 percent of the total budget. About 25 percent of this amount is spent on basic construction. More than 60 percent is allocated to supporting rural production. The rest of the budget is allocated for circulating funds (0.5 percent), expenditures to support the development of new products (1.2 percent), and other expenses (12.4 percent).

China's Government Subsidies

The government provides subsidies of many forms to both consumers and producers. Data on three types of subsidies are available. First, there are the government subsidies that filled the gap between farmgate and urban retail prices. During the reform period, the government held urban food grain prices constant to attain the objective of price stability, while increasing the purchase prices of agricultural commodities to stimulate production and raise rural living standards. Those subsidies rose from 5.6 billion yuan in 1978 to 27.5 billion in 1985, an increase of 291 percent. As a share of total state revenues, those subsidies nearly tripled, from 5 percent in 1978 to 14.7 percent in 1985. Second, the government subsidized farm producers by providing input supplies at reduced prices. Those subsidies fell during the reform period, from a high of 2.4 billion yuan in 1978 to 0.7 billion in 1985, a decrease of 71 percent. A third kind of state subsidy was provided to consumers of imported grain, cotton, sugar, fertilizer, and agricultural chemicals to cover the difference between the import cost and domestic retail prices (table 24).

A long period of adjustment is likely as China's top authorities persist in modernizing the economy over the next decade. Producers and consumers in China will adjust to the new conditions of greater consumer choice, specialization, least cost calculations, profits, risk, and domestic and foreign competition. These adjustments inside China will in turn affect producer and consumer participation in international markets.

Continued economic reforms could have important effects on international agricultural commodity markets. Reformers have been most successful with

Table 24--Categories of state expenditures on agricultural subsidies in China

Year	Total	Subsidies to stabilize retail prices	Subsidies to support purchase of agricultural inputs	Subsidies to cover difference between cost of imported goods and retail prices
		Billion yuan		
1978	9.386	5.560	2.391	1.435
1979	18.071	13.602	2.179	2.290
1980	24.207	17.856	2.041	4.310
1981	32.772	21.772	2.174	8.826
1982	31.836	24.022	2.135	5.679
1983	34.166	26.952	1.346	5.868
1984	37.000	32.085	.815	4.100
1985	29.947	27.492	.696	1.759

Note: Subsidy categories were translated from Chinese language tables and precise definitions of some categories are not entirely known.

Source: (7, p. 633).

changes in the agricultural sector, which have had dramatic effects on international trade. Equally dramatic effects are likely as authorities are able to implement price reforms for both urban and rural sectors of the economy. Reforms in enterprise management, restructuring of the banking system, formation of capital markets, and the development of a legal system which would protect contracts will aid the process of change. Current plans to decentralize foreign trade corporations that formerly insulated domestic producers and consumers from international economic activity will promote the sharing of economic benefits and losses between central and local governments and likely will boost foreign trade activity.

What kind of trade patterns could one expect if one assumed that trade conditions were liberalized in China and in the rest of the world by the year 2000? On China's agricultural export side, one could expect that there would be an increase in the exports of cotton and cotton textiles, canned fruits and vegetables, specialty products like medicinal herbs, frozen berries, and tea, and handicraft items. With the foreign exchange earned from the sale of these products, one would expect firms to continue to purchase key machinery, raw materials, and technology to expand industrial output. The demand for imported wheat would rise, and more feed grains would also be imported to meet domestic demand for livestock products. Imports of improved varieties of seed and livestock would increase.

China's plans to participate in GATT will likewise help China become a regular and active partner in the system of world trade. Decreasing government intervention in the economy will provide for more liberalized trade conditions which in the long run will improve domestic production efficiency and will benefit all trading partners.

METHODOLOGY: PSEs AS AGGREGATE MEASURES OF SUPPORT

John Wainio, Barbara Chattin, and John Sullivan

While the rapid increases in agricultural trade during the 1970s fostered greater global interdependence, governments were simultaneously taking actions designed to protect domestic producers from the effects of the world market. Government intervention in agricultural trade is today the rule rather than the exception (31, 42) and has obscured global interdependence. Governments have separated domestic markets from the international market by using a bewildering array of nontariff barriers instead of traditional tariffs. Commodity markets have become so distorted and assistance has become so costly that the major agricultural trading nations will attempt to reduce the level of government intervention in agricultural markets at the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) negotiations.

Reducing government intervention in world agricultural markets requires an understanding of the policy measures used to assist farmers and the effects these policies have on domestic and international markets. Economists have worked on developing appropriate aggregate measures designed to quantify, in one parameter, the level of government support to agricultural producers. This work has helped to make the nature and prevalence of subsidies to agriculture more transparent. Use of an aggregate measure of support may help the parties in the GATT come to an agreement on reducing government assistance to agriculture as well as provide an instrument to aid the monitoring of the agreement. Researchers in the Organization for Economic Cooperation and Development (OECD) and USDA's Economic Research Service (ERS) have devoted considerable effort towards calculating one such measure, the producer and consumer subsidy equivalent (PSE/CSE).

We examine the PSE/CSE approach in this section. First, we compare the PSE/CSE method to other aggregate measures of support. Next, we review procedures for calculating PSE/CSEs. Finally, we discuss uses and interpretations of the PSE/CSE measure.

Aggregate Measures of Support

Aggregate measures of support quantify the level of government intervention in the marketplace resulting from a wide range of government policies and programs. Support measures are usually percentages or ratios. The breadth of policy coverage captured in the numerator as well as the reference point used for the denominator differ among support measures. Research has focused primarily on three aggregate measures: nominal rates of protection (NRP), effective rates of protection (ERP), and PSE/CSEs. Table 25 shows examples of policies included in each of these measures.

The NRP was the earliest used aggregate measure and, theoretically, the simplest (3). The NRP is expressed as the difference between domestic and world price, divided by world price. An NRP equal to 0.5 indicates that domestic price exceeded world price by 50 percent. (Another way of expressing the same result is with a nominal protection coefficient, which is domestic price divided by world price, or 1.5 in the example above.) The NRP measures the effects of border policies including tariffs, quotas, variable levies, and export subsidies as well as other trade or related domestic policies. Also

Table 25--Policies included in various aggregate measures of support

Policy measure	NRP	ERP	PSE	CSE
Support to output:				
Via market price support--				
Border measures (tariffs, quotas, variable levies, export subsidies)	x	x	x	x
Export taxes (negative)	x	x	x	x
Two-price systems	x	x	x	x
Price premiums	x	x	x	x
Domestic price supports	x	x	x	x
Marketing board activities	x	x	x	x
State trading operations	x	x	x	x
Via direct income support--				
Deficiency payments	(1)	(1)	x	
Producer levies (negative)	x	x	x	
Income stabilization funds			x	
Crop insurance			x	
Consumer food donations				x
Marketing subsidies:				
Transportation subsidies			x	
Marketing programs			x	
Inspection services			x	
Assistance to inputs:				
Fertilizer subsidies		x	x	
Fuel tax exemptions		x	x	
Concessional credit			x	
Irrigation subsidies		(1)	x	
Assistance to long-term production:				
Research and extension			x	
Conservation programs			x	
Structural programs			x	
Controlled exchange rates			x	x
Tariffs on purchased inputs		x		

Notes: (1) These policies are included if they are assumed to directly affect outcome output or input prices.

Source: Adapted from definitions found in (37, 49).

included are price effects from import/export control operations of marketing boards and state trading organizations.

The NRP generally measures policies that affect both consumer and producer prices. The NRP can also include policies, such as a target price/deficiency payment program, that change only producer prices, not consumer prices. Such policies would not be included if they were considered lump-sum income transfers. The NRP is estimated using producer prices and world prices for bulk commodities. The examples shown in Table 25 are based on such an interpretation. An NRP for consumers as well as producers can be developed using consumer prices.

In addition to supporting producers' gross income through policies directly tied to agricultural output, governments can support producers' net income through policies that lower the cost of inputs. Economists have developed the concept of an effective rate of protection (ERP) to measure the combined effects of policies that separate both output and input prices from their respective world prices (10, 11). The ERP is the difference between the value added per unit of output at domestic prices versus at world prices, divided by the value added per unit of output at world prices. Value added is the value of the final output less the cost of purchased intermediate inputs. Calculations of value added require input-output coefficients that are not readily available across countries. The ERP measures the effects of border measures and price policies that influence both the price of the output and the price of intermediate inputs. The ERP excludes policies that provide lump-sum income transfers or lump-sum input subsidies to producers. For example, the ERP would not include irrigation infrastructure expenditures but would include subsidies for below-market pricing of water from those projects. Likewise, the ERP would include deficiency payments if they affected output price.

The PSE is the level of producer subsidy necessary to replace current agricultural programs in order to leave farm income unchanged (13, 14). The CSE is defined correspondingly. PSEs often are expressed as the total value of subsidies as a percentage of adjusted producer income (cash receipts plus net direct payments), while CSEs are expressed as the total value of subsidies as a percentage of consumer expenditures. The first calculations of PSEs and CSEs included only commodity-specific policies, such as pricing policies, deficiency payments, input subsidies, storage subsidies, and transport subsidies (13, 14, 21). Calculations of PSEs and CSEs by the OECD broadened policy coverage to include indirect income support and government programs that are not necessarily commodity specific, such as structural programs, research, and extension (31). ERS has extended the OECD measure to include the effects of exchange rate distortions in several developing countries (49, 50).

PSE/CSEs include more government policies than does the NRP, thus satisfying one objective of the ERS study, which was broad policy coverage. Another objective was to provide a measure for consumers, which the ERP does not include. The PSE and ERP measure effects of government policies that reduce the price paid by agricultural producers for purchased inputs. The ERP also measures the implicit taxation of producers when domestic input sectors are protected from international competition by border measures. A PSE measure could be developed to include the effects of such policies if the policy coverage of the PSE measure were broadened to include economywide as well as agriculture-specific policies. Expanding the policy set would also require reliable data on relevant input policies and input use by commodity. The ERS

study focused on government programs within the agricultural sector and, in some cases, effects of controlled exchange rates. The following section provides a more detailed summary of policies contained in PSEs and CSEs and how the estimates are derived.

The current interest in agricultural protection has led to the development of additional support measures, including the nominal rate of assistance, the effective rate of assistance, and the trade distortion eqivalent. The nominal rate of assistance (also known as the price adjustment gap) is closely related to NRP, differing only in the set of interventions measured. The nominal rate of assistance includes support provided by border measures and pricing policies (the NRP) plus other forms of direct assistance (such as deficiency or disaster payments) affecting producer's unit gross returns (18, 28).

The effective rate of assistance is similar to the ERP but, in addition to including assistance as value added per unit of output at domestic price, also includes government expenditures on programs that affect the cost of inputs and marketing services purchased by the producer as well as programs that affect primary factors of production (land, labor, and capital) (18, 28). The nominal rate of assistance includes more policies than the NRP but fewer than a PSE, whereas the effective rate of assistance includes all policies contained in the PSE plus all policies that affect purchased and primary inputs.

All of the aggregate support measures mentioned above are static indicators of the level of protection provided by government policies (26, 27). The trade-distortion equivalent, however, attempts to determine what market behavior would have been in the absence of government programs. Measures of protection (like the PSE and CSE), supply and demand elasticities, and domestic production and consumption levels are used to derive the trade-distortion equivalent.

Measures of protection, including the trade-distortion equivalent, are always based on a partial equilibrium framework, estimating the effects of government policies given current levels of production, consumption, trade, and prices. These measures can be used as a policy input into a simulation model of world agricultural trade (36). The simulation model can identify the effects of policies on trade volumes more accurately than a single-commodity trade-distortion equivalent because the model incorporates cross-commodity, cross-country effects that are not included in trade-distortion equivalents.

Estimating PSEs and CSEs

The PSE and CSE estimates derived by ERS cover a broad range of countries and commodities. PSEs and CSEs are calculated for each commodity in a country using local currencies. While each country has a set of policies peculiar to its agricultural sector, using a standard framework to measure the effects of these policies permits comparisons among countries and commodities.

ERS subsidy estimates measure six broad policy categories: market price support (involving border measures and domestic pricing policies), direct income support, input policies, marketing programs, policies affecting long-term production, and controlled exchange rates. Table 25 gives examples of policies included in each category. PSEs and CSEs sum subsidies from these programs by assuming that program benefits are additive. ERS subsidy estimates apply to individual commodities without including cross-commodity effects, such as the effect of price supports for grains on livestock producers.

PSE and CSE components are derived in two ways: (1) by calculating the wedge that a policy instrument drives between domestic and world prices and multiplying the price wedge times total production (PSE) or total consumption (CSE), and (2) by using government budget or financial information. Price wedges help derive estimates for government policies that directly affect producer and/or consumer prices. Government budget or financial data help estimate effects of policies on either the producer or the consumer, but not both.

In rare cases, a tariff is the only government policy that directly affects market prices. A tariff rate is treated like a price wedge in the PSE/CSE method. More often countries use a mixture of administrated prices, border measures (tariffs, quotas, variable levies, export subsidies, state trading) and, in some cases, stocking or supply control programs to separate domestic prices from world prices. For example, many governments intervene in the dairy sector through minimum price policies, at times accompanied by direct purchases, stocking, and supply controls. Such countries must also restrict imports of dairy products by border measures such as tariffs or quotas. If not restricted, imports will likely flow into that country in search of the higher domestic price. Where policy instruments are functionally linked, that is, when one is implemented to support the other, PSEs and CSEs estimate the net effect by measuring the price wedge caused by the set of policies, rather than attempting to isolate the effect of each policy instrument.

Another type of pricing policy used in some countries is a two-price system whereby the domestic consumer price is set above or below the export price of the product. Exports are sold at prevailing world prices. The price gap used to calculate benefits from such programs is determined by comparing the supported domestic price with the world price (export price) and applying the difference to the quantity of domestic consumption. In a two-price system, the price wedge is not applied to all of production because the policy acts only on a part of production (the quantity consumed domestically).

Comparing domestic to world reference prices is a common technique used to estimate market price support components of the PSE and CSE. Country-specific reference prices, not a single observed world price, are used in ERS calculations. A specific rather than a common reference price better represents differences in quality and grades of the commodity produced in the country. The reference prices used in the calculations are derived from observed world market prices, which, in turn include effects of government policy actions in agricultural and financial markets. Almost all traded commodities are priced in U.S. dollars, no matter who buys or sells the product. Thus, when the value of the dollar appreciates, the world reference price observed by countries other than the United States rises, and vice versa. Countries supporting producer prices above world prices find that the price wedge is narrower than it would have been under constant U.S. exchange rates unless their agricultural policies are responsive to world prices. The price wedge would be larger for countries that tax agricultural producers through price policies and border measures.

PSE and CSE components for other agricultural programs are derived using government budget or financial data. Generally, producer direct income transfers from commodity programs and direct consumer subsidies are reported by commodity in government budget accounts. For example, when a country offers a production subsidy by means of deficiency payments, treasury outlays will be increased to cover the cost of the subsidy and reported in the budget by commodity. Government accounts report some input subsidies on a commodity

basis. In other cases, government budget or financial data show the aggregate amount given to a particular function, such as research, marketing, or infrastructure development. In these cases, the data are allocated across all commodities that receive support in proportion to each commodity's share in the value of agricultural output.

Many countries have introduced supply control programs in recent years and it has been suggested that these countries receive some credit in the PSE calculation (thereby lowering the PSE) to reflect these programs. At present, PSEs do not include government outlays related to permanent or long-term resource retirement programs because such programs permanently remove resources from production. An effective supply control program reduces production from what it would have been in the absence of the program, therefore total government transfers are lower than in the absence of the program. If a country's trade share is large enough to affect world prices, a supply control program also will raise world prices higher than they would have been in the absence of the program, thereby reducing price wedges used in the PSE and CSE calculations. In this case, the observed production, consumption, and price data used to calculate PSEs and CSEs would include these effects of supply controls; therefore they are not explicitly measured elsewhere in the PSE calculation.

Uses and Interpretation of Subsidy Equivalents

By aggregating a variety of government policies into one parameter, subsidy equivalents allow comparisons to be made of government support across countries, commodity markets, and types of policies that would otherwise be impossible. The calculation and publication of PSEs and CSEs by ERS and the OECD has made the extent of subsidies to agriculture more transparent to commodity groups, policymakers, and the public.

PSEs and CSEs show the relative importance of government policy in different countries and commodity markets in terms of its contribution to farmer revenues and consumer costs. Subsidy equivalents help identify which forms of government assistance are most important in individual countries or in specific commodity markets. When examined over time, subsidy equivalents indicate changing government involvement in the agricultural sector.

PSE estimates are expressed in three ways: (1) the total value of transfers, derived by summing the estimated value for each policy or group of policies; (2) the per unit value of transfers, derived by dividing total transfers by total production; and (3) the percent PSE, estimated as total transfers divided by adjusted producer income. The CSE can be similarly expressed.

If information is available to calculate PSE/CSEs for enough countries and the data are converted to a common currency, comparing total value of transfers across countries gives a good idea of an individual country's contribution to global assistance. The value of transfers can also be used to examine the effect of specific types of intervention, such as marketing subsidies, on the total transfers for a country, group of countries, or a particular commodity. Total policy transfers, however, do not allow the ranking of intervention levels among different-sized countries. The per unit estimates, expressed in a common currency, can show relative levels of intervention for a particular commodity but do not provide a means of comparing support levels across commodities. The percent PSEs and CSEs often help make comparisons across countries or commodities.

The percent PSE relates total government support for a commodity to a specific definition of producer income: production valued at market prices plus commodity-specific direct income transfers. The denominator does not include all transfers from government to producers. Noticeably missing are the effects of policies that provide input support, marketing support, or research and extension services. If a country provided a significant amount of support to farmers via these latter types of programs, excluding the programs from the denominator would make that country's percentage PSE larger, possibly greater than 100 percent. Second, in comparisons of PSEs over time, a country that changed its policy support profile away from these programs into price-distorting programs or direct payments could maintain the same (or higher) support to farmers while still lowering its percentage PSE. Interpreting comparisons based on percent PSEs requires considering these issues.

The percent PSE shows the effect of government transfers on an income measure that is a rough approximation of gross cash income from the commodity. The numerator includes government programs that affect cash income and cash expenses as well as outlays for programs, such as research, that may not have a one-to-one relationship with gross cash income. The transfers measured by the PSE include elements that affect both net and gross cash income but, without additional data, cannot be used to analyze effects of government programs on farm financial well-being. For example, concluding that, if all government programs were removed, farm incomes would decline by the value of transfers estimated by PSEs would be erroneous. Farm income in the absence of government programs would depend on the new levels of production, consumption, trade, and prices. PSEs simply measure the value of government transfers under current policy and market conditions.

PSEs and CSEs alone do not reveal distributional effects of countries' policies. For example, PSEs can indicate whether the grain sector receives more or less assistance than the dairy sector. PSEs cannot show whether the transfers for grains are received equally by all producers or if some grain producers receive proportionately more of the transfers from a given program. PSEs also do not indicate whether the grain farmers receiving the transfers are already wealthy or poor. Similar issues arise in interpreting CSEs.

Subsidy equivalents are static measures based on prices, production, consumption, and trade under current policy conditions. They do not indicate the effects of current government policies on domestic and world markets. Two countries may have the same PSE level and yet have very different effects on agricultural markets.

The trade effects of a country's policies may differ with the same PSE for three reasons. First, different policy instruments produce different trade effects. For example, deficiency payments stimulate production but do not have a direct effect on consumption. Quotas, by raising both producer and consumer prices, reduce demand and increase supply. A second reason is that producers and consumers in different countries may respond differently to the same type of government intervention due to technological factors, resource constraints, social and political factors, and market characteristics. Finally, the impact of a country's policies on world markets will depend on the country's trade share. The larger a country's share in world trade, the more impact that country's policies will have on world markets.

PSEs and CSEs also do not show the effects on world markets of removing government programs. Estimating effects of liberalizing agricultural trade by

removing government support requires multi-commodity, multi-country trade models. The OECD, the World Bank, and ERS have developed several such models (31, 47, 36). The policy structure in these models relies on subsidy equivalents or some other aggregate measure. This measure is then removed, shocking the model from the observed equilibrium situation.

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ECONOMIC RESEARCH SERVICE
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