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The Impact of Agricultural Support Policies in the
United States and Other Major Countries: A Survey

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Abstract

This paper examines the recent difficulties experienced in U.S. agriculture, and discusses the role played by government policies, in particular reviewing recent developments in those policies. Studies of the extent and costs of agricultural protection in the United States and other major countries are surveyed and possible effects of multi-lateral reform of agricultural policies are discussed.

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Summary

The U.S. agricultural sector has experienced severe difficulties in the 1980s, with the causes including the weakness of commodity prices, high rates of interest, and the appreciation of the U.S. dollar from mid-1980 to early 1985. Seen in the wider context of the process of disinflation in the early 1980s--which invalidated the expectations on the basis of which earlier economic decisions had been made--the debt servicing difficulties of segments of the U.S. farm sector resemble those experienced by some heavily indebted developing countries.

This paper examines the recent difficulties experienced in U.S. agriculture and discusses the role played by government policies. Studies of the extent and costs of agricultural protection in the United States and other major countries are surveyed and possible effects of multilateral reform of agricultural policies are discussed.

The slowdown in the growth of world demand for agricultural products in the 1980s has not been matched by a comparably reduced rate of growth of production in some major countries. Instead, government policies in major industrial countries, pre-eminently the European Community (EC), Japan, and the United States, have sought to shield domestic producers, thereby continuing incentives for growth in production at a time when market signals would have dictated retrenchment. The result of these policies has been a huge accumulation of stocks of agricultural products and associated declines in commodity prices. Available studies of the extent of assistance for agriculture, based on the producer subsidy equivalent framework developed at the OECD, indicate very high levels of protection for agriculture in the EC, Japan, and the United States, with the level somewhat higher on average in Japan than in the EC, and in turn higher in the EC than in the United States.

The global nature of the difficulties in agriculture and the magnitude of protection for agriculture in many countries have led to a multilateral approach to reform of agricultural policies. Available research indicates that current agricultural policies in major countries impose substantial welfare costs and suggests that the costs of adjustment to a more market-oriented system might be mitigated if several countries would liberalize simultaneously.



I. Introduction 1/

After the boom conditions of the 1970s, the agricultural sector in the United States has experienced severe difficulties in the last several years. The causes of the difficulties have included the unanticipated weakness of commodity prices in the 1980s, high rates of interest, continued surplus production, supported by government programs, and the appreciation of the U.S. dollar from mid-1980 to early 1985, which made it difficult for U.S. agriculture to compete in the world market. Seen in the wider macroeconomic context of the process of disinflation in the early 1980s, the debt servicing difficulties of segments of the U.S. farming sector are in some respects similar to those experienced by some heavily indebted developing countries.

Government programs have been initiated and existing programs extended, in attempts to cushion the farm sector from the burden of adjustment. At times, however, these efforts have had adverse consequences. In particular, the link between Government support payments and production has generated incentives for expansion of production at a time when market signals would have indicated retrenchment, exacerbating the problem of excess supply. Thus, official efforts to cushion agriculture have at times helped to accentuate the difficulties which have developed in world agricultural markets.

The severity of the problems faced by the U.S. farm sector has placed strains on financial institutions which concentrate on agricultural lending and has led to a rapid rise in federal budgetary outlays for farm support. The U.S. Administration has taken the view that over the long term reduced government intervention in agriculture would be desirable both at home and abroad, and has pressed that approach in international forums. At the same time, as a short-term strategic matter, however, additional budgetary support has regularly been granted to U.S. agricultural producers.

Developments in the U.S. farm sector and in U.S. agricultural policies are both strongly influenced by and have substantial repercussions for world agricultural markets and for agricultural policies in other countries. A feature of the recent discussion of agricultural issues has been the growing recognition that the problems faced by the farm sector in a particular country cannot be adequately

1/ This paper draws on a variety of sources, including the 1984, 1986, and 1987 Annual Reports of the U.S. Council of Economic Advisers; several publications of the U.S. Department of Agriculture's Economic Research Service; the World Bank's World Development Report of 1986, and background studies prepared for that report; a monograph published by the Australian Department of Primary Industry: "The Political Economy of International Agricultural Policy Reform"; various studies at the OECD, and several publications of the Food and Agricultural Policy Research Institute (FAPRI), of the University of Missouri-Columbia and Iowa State University.

addressed in isolation. Rather the extent of the adjustment effort that may be made in one country is likely to be strongly influenced by policies in other countries. Thus it is desirable to examine the problems confronting the farm sector of the U.S. economy in the context of the difficulties faced by the agricultural sectors in other industrial countries. It is within this broader international perspective that the recent moves toward multilateral liberalization of agricultural policies can best be understood.

The magnitude of the difficulties in world agricultural trade was acknowledged in the communiqué issued in May 1986 by the seven major industrialized nations 1/ at the close of the Tokyo summit; the communiqué stated that:

"...a situation of global structural surplus now exists for some important agricultural products, arising partly from technological improvements, partly from changes in the world market situation and partly from long-standing policies of domestic subsidy and protection of agriculture in all our countries. This harms the economies of certain developing countries and is likely to widen the risk of wider protectionist pressures... when there are surpluses, action is needed to redirect policies and adjust structure of agricultural production in the light of world demand..."

Subsequently agriculture was included in the agenda at the GATT Ministerial Meeting held in Punta Del Este in September 1986 to launch a new round of multilateral trade negotiations. The declaration at the end of the ministerial meeting contained a comprehensive negotiating mandate, including coverage of all subsidies directly and indirectly affecting trade in agriculture, bringing within the scope of the negotiations not only export subsidies but also all other measures significantly affecting the operation of international agricultural markets. The political mandate for agricultural reform was further reinforced by the declaration issued by the seven major industrialized nations at the Venice summit in June 1987.

In the early sections of this paper, developments in U.S. agriculture and agricultural policy are the focus, while in the later sections, the emphasis is on developments and policies in the international sphere. Section II outlines briefly the background to present difficulties in U.S. agriculture. Section III discusses the role played by government programs for agriculture in the United States, examines the impact of the 1985 farm bill, and outlines a recent U.S. proposal for comprehensive agricultural liberalization. Section IV reviews recent developments in international agricultural markets, and section V discussed some studies of the extent and costs of protection of agriculture in major countries. Section VI examines possible effects of multilateral agricultural reform. Section VII provides a conclusion.

1/ The United States, Japan, the Federal Republic of Germany, France, the United Kingdom, Italy, and Canada.

II. Background to the Present Difficulties in U.S. Agriculture

The crisis in agriculture in the United States was largely unanticipated and came on the heels of a major boom, beginning in the early 1970s, that had given rise to a substantial increase in agricultural earnings and exports. In the early 1970s, domestic demand for grain--a major product of U.S. agriculture--remained high as livestock production approached a cyclical peak and the purchase by the Soviet Union of large quantities of U.S. grain in 1972/73 depleted U.S. stocks and pushed prices upward. The U.S. drought of 1974 and rising real incomes in food-deficit nations boosted crop prices for U.S. farm exports. Farm asset values responded to the new income levels and the strong expectations of continued income gains, and by the late 1970s farmers had capitalized the new level of income into the value of assets, reflecting the expectation that those income gains would continue in the period ahead.

For more than ten years, the financial experience of the U.S. agricultural sector was dominated by the advent and then the consequences of this farm sector boom. In 1972 and 1973, when huge increases in agricultural commodity prices took place, virtually all producers benefited. The ratio of prices received by farmers to those paid for inputs jumped by 27 percent from 1970 to 1973 to its highest level since the early 1950s, and net farm income (in constant dollars) reached its postwar peak in 1973. The boom continued--although net farm income declined in real terms from its 1973 peak--until 1980, when farm commodity prices leveled off while general prices were rising rapidly. Over the following two years, substantial harvests and worldwide recession diminished the chances for a rebound in agricultural prices and incomes. At the same time, U.S. farmers were affected by a large increase in interest costs, and their competitive position was eroded by the rising exchange value of the dollar. As farm income fell, prospects for future gains also diminished and the value of farm assets in the United States dropped by more than \$200 billion, or 20 percent, from 1981 to 1985. In consequence, the economic condition of related businesses in many rural communities, particularly agricultural banks and farm service and input supplying businesses, deteriorated.

At least in part, the problems of the U.S. agricultural sector can be seen as an unfortunate consequence of the process of rising inflation in the 1970s and the subsequent disinflation in the early 1980s. In the inflationary era of the 1970s, many farmers came to expect the rising trend in farm prices to persist. Expansion of productive capacity appeared to promise high returns, especially since new investment could readily be financed by borrowing at low or negative real rates of interest. Rising farm incomes led to large increases in the value of agricultural land, enabling borrowing to expand even further. When, in October 1979, monetary policy took a decisive turn in the direction of disinflation, commodity prices fell on a worldwide basis, the exchange value of the dollar soared, and interest rates rose sharply. U.S.

farmers found themselves with a reduced ability to compete in a world market that was growing much less rapidly. Sharply lower prices and revenue and mounting interest costs squeezed the cash flow of farmers severely. Meanwhile, the value of farmland tumbled as earlier expectations about farm prices and profits were revised sharply downward.

In 1986 and 1987, the economic position of the U.S. farm sector appears to have stabilized somewhat, although the situation varies by region and by farm commodity produced. The decline in farm land values appears to have been arrested and in fact net cash farm income was a record \$44 billion in both 1985 and 1986. Nevertheless, the situation remains fragile, with many marginal producers being squeezed out of farming in a continuing adjustment to the changes of recent years. The major element permitting some recent stabilization in the U.S. agricultural sector has been the continued high level of government support which has contributed very substantially to farm incomes, while the substantial depreciation in the value of the U.S. dollar since early 1985 has also played a role.

III. Agricultural Policy in the United States

1. Overview

The U.S. Government has developed an extensive array of programs which attempt to improve the economic position of farmers. Outlays for farm income stabilization have risen from \$5.7 billion (1.7 percent of federal budgetary outlays) in FY 1977 to \$29.6 billion (3.7 percent of federal budgetary outlays) in FY 1986 and remained in that range in FY 1987. This section describes the main features of these programs and recent efforts to reform and restructure them. A key institution in this context is the Commodity Credit Corporation (CCC), created by the Agricultural Adjustment Act (AAA) of 1933 and authorized to borrow from the Treasury to finance its price-support programs; these programs operate inter alia through nonrecourse loans and direct purchases.

In a nonrecourse loan program, the farmer takes out a loan and pledges his crop as collateral. The size of the loan is the so-called loan rate ^{1/} multiplied by the amount of the crop put under loan. Maturity is normally a year or less and the interest rate is typically below market rates. At maturity or earlier, the farmer can repay the loan to the CCC, or he can freely default--hence the term nonrecourse--by delivering the collateral commodity to the CCC, thus removing any further obligation to repay the principal and accrued interest. The CCC is permitted to resell commodities if market prices rise to prespecified levels above loan rates. The CCC's general policy in this regard is to stabilize prices and protect its investment while minimizing

^{1/} The loan rate is not a charge but rather the payment per bushel that a farmer receives as a loan from the CCC, and in effect establishes a floor for the commodity price.

interference in the market. Commodities that benefit from loan programs include wheat, corn, barley, oats, rice, cotton, honey, peanuts, sorghum, soybeans, rye, tobacco, and sugar.

In recent years, loan rates generally have been high enough relative to world prices to encourage forfeiture to the CCC. Because many of the commodities involved were normally sold for export, high loan rates in effect acted as a tax on exports and the loan rate became a minimum price under which competitors could undersell U.S. farmers. U.S. farmers lost shares in world markets, and agricultural production and incomes in the rest of the world were in effect supported by the U.S. taxpayer. In the international wheat market, for example, the loan rate has set a floor to prices and has caused U.S. production to be diverted to the CCC, while other wheat exporting countries have increased exports correspondingly.

The CCC also supports some commodity prices by buying commodities in potentially unlimited amounts at a stated price--the support price. The economic effects of such direct acquisitions resemble those of commodity loans except that no credit subsidy is involved. Excess production is likely to result if the support price exceeds the market price which would otherwise prevail. Dairy products are the main commodity group for which the CCC supports prices through direct acquisition. From 1980-84, program costs exceeded \$9 billion. In 1985, the CCC bought roughly 64 percent of all U.S. nonfat dry milk production, 24 percent of butter production, and 20 percent of cheese production.

Restrictions on the disposal of CCC-owned stocks have at times led to very large accumulation of stocks which in turn has required new mechanisms to run down those stocks. One such mechanism has been the payment-in-kind (PIK) program, under which producers are paid with units of commodities for reducing acreage; PIK programs were employed in the 1960s, particularly 1961 and 1962, and were revived in 1983. The 1983 PIK program achieved its immediate objectives of reducing production and eliminating much of the government-owned surplus, except for wheat; however, the impact was short-lived as the PIK program did not sufficiently address the fundamental problem of excess supply, generated by incentives provided in government programs.

In addition to nonrecourse loan and direct acquisition programs administered by the CCC, there are also programs involving deficiency payments. The Agriculture and Consumer Protection Act of 1973 sought to separate price support from income support by introducing target prices and deficiency payments. Target prices are set above the loan rate and entitle participating farmers to receive per-unit deficiency payments equal to the difference between the market price and the target price, but not to exceed the difference between the target price and the loan rate. As long as the market price exceeds the loan rate by enough to pay accrued interest, farmers will find it profitable to sell the crop and collect the deficiency payment. In this way, support is provided for agricultural incomes, without the Government acquiring stocks of

agricultural commodities. However, target prices lead to uncertain and potentially large government outlays. Deficiency payments are frequently contingent on farmers retiring acreage from production. Such acreage retirement requirements frequently have less effect than might at first sight be expected--because the poorest land will be retired first, and because the retirement of some land releases resources which can be used to farm the remaining land more intensively.

Production diversion programs pay farmers directly not to produce--typically in concert with one of the income support programs already discussed. In 1985, for instance, the wheat, cotton, and rice programs required both unpaid retirement and the paid diversion of some of the farmer's base acreage. Producers take part in such programs if income from the target price and the land diversion payment exceeds potential market receipts, taking into account the loss from acreage retirement. Society loses from virtually all production diversion programs, as the taxpayer cost of the diversion and deficiency payments, added to the wastage of resources caused by the diversion, exceeds any producer or consumer gains.

Production and marketing quotas support farm income by limiting farm production or sales in the domestic market. When mandatory production controls are at work, consumers lose because they buy less at a higher price, and productive resources are diverted to less economically rewarding avenues. Marketing quotas are similar, except that they limit domestic sales rather than domestic production.

2. The Food Security Act of 1985

a. General provisions

The Food Security Act of 1985 ^{1/} sought to reduce the budgetary costs of agricultural programs and to promote a more market-oriented farm sector. At the same time, the Act sought to provide continued insurance against market risks that were beyond the farmers' control and to alleviate some of the financial stress being experienced. The law retained most of the farm programs that were already in place, although it modified their mode of operation. In particular, target prices and loan rates were reduced throughout the life of the 1985 Act, and loan rates were tied to formulas based on moving averages of market prices. In spite of these changes, budgetary outlays remain substantial and incentives to overproduce continue, although they are reduced somewhat. Moreover, in some instances--in particular with respect to export subsidies--the Act has moved further away from a market orientation.

The Administration's draft legislation in early 1985 had proposed to reduce both target prices and loan rates with a view to curbing

^{1/} Major farming bills were passed in 1977, 1981, and 1985. Unlike its 1981 predecessor, the 1985 Act covers five crop years (1986-90), instead of four years, as was previously the case.

budgetary outlays and reducing the incentives for surplus production created under the 1981 Act. However, as the congressional debate progressed, the proposed reductions in target prices became increasingly controversial from a political standpoint given the growing difficulties faced by many farmers; eventually adjustment by means of large reductions in target prices was essentially ruled out.

In the 1985 Act, loan rates are tied to formulas based on moving averages of market prices, and the Secretary of Agriculture has discretion to reduce those rates below the formula levels, if certain conditions are satisfied. For wheat and feed grains, target prices are frozen for two years, and for cotton and rice for one year, at the 1985 levels; thereafter nominal target prices are to decline by 10 percent over the life of the Act. Because the freeze on target prices had substantial budgetary implications, renewed impetus was provided for acreage control measures. The idea was essentially to cut supplies so that CCC stocks would not accumulate, and to drive up market prices so that deficiency payments would diminish. In essence, the incentives to overproduce were kept intact, while output was suppressed through acreage diversion. The official expectation is that the reductions in target prices and loan rates will diminish the extent of their influence on output and prices. However, since target prices would decline by only 10 percent, while loan rates would decline by much more, the outcome may be increased budget exposure. Even with frozen base acreage and program yields, overproduction is likely to remain a problem because the base levels are high and the relatively high target prices provide strong incentives for maximum acreage to be utilized.

Deficiency payments are still based on production, rather than on some criterion of income, equity, or need. Payments are capitalized into land prices, so that the benefit ultimately accrues to landowners. The previous limit of \$50,000 on payments per person was retained in the 1985 Act but, because of a host of exemptions, the objective of targeting benefits to those most in need is less likely to be realized.

Acreage reduction is mandatory in the 1985 Act; as in the past, to be eligible for program benefits, producers must comply with any announced acreage reductions. According to the Department of Agriculture, the effect of acreage reductions remains uncertain as they may encourage foreign producers to expand production, relying on the United States to provide protection against the risk of price declines. Expanded foreign agricultural output in turn would reduce the U.S. share of agricultural trade over time, and undermine the goal of acreage reduction programs to support prices.

b. International trade effects

The 1985 legislation attempted in several ways to diminish the extent to which U.S. domestic farm programs, through high loan rates or other mechanisms, effectively supported world market prices for various commodities. The aim of the law was to permit U.S. prices of commodi-

ties to adjust to world market levels while still maintaining income support for U.S. producers. Such a shift of emphasis of course has adverse implications for those countries which previously benefited from the fact that U.S. policies were helping to support world market prices; at the same time, U.S. farmers are partly insulated from the price falls because of continuing government support. The legislation reflected a conscious effort to win back lost shares in world markets. To some extent, the drive for an increased market orientation has meant the creation of incentives and mechanisms for the disposal of excess agricultural production on world markets, instead of by delivery to the CCC.

The 1985 Act mandated \$2 billion of support for the export enhancement program (EEP) over the period through September 1988. This was later reduced to a range of \$1 billion to \$1.5 billion in the Food Security Improvements Act of 1986. Under the program, the Government makes CCC stocks available to increase the export competitiveness of U.S. agriculture. Thus the program takes advantage of the large stocks accumulated because of high target prices and loan rates, and uses them to subsidize agricultural exports. In July 1987, it was announced that the EEP would continue to be funded out of existing appropriations, with no specific ceiling applying to total expenditures under the program. By November 25, 1987 the total value of export sales made under the auspices of the EEP had reached \$2.8 billion, with the subsidy component amounting to \$1.3 billion. 1/ In addition to the export enhancement program, a further \$110 million for each of the fiscal years from FY 1986 to FY 1988 and \$325 million for FY 1989 and FY 1990 (in funds or an equal value of CCC commodities) is required to be spent for export assistance to counter the effects on U.S. agricultural exports of subsidies, import quotas, or other trade practices by foreign governments deemed to be unfair by the United States. Although the export enhancement program was originally intended to counter apparently unfair practices by competitor countries, it has in addition had adverse effects on other agricultural exporters, since international agricultural markets are of course globally linked. Moreover, with the passage of time, a domestic political constituency in favor of continued agricultural export subsidies has developed and subsidies under the EEP have been granted even when no specific unfair foreign practice provided a rationale. Short-term export credit guarantees of up to \$5 billion for each fiscal year from FY 1986 to FY 1990 have also been made available. Intermediate-term export credit guarantees are authorized and existing export credit authority broadened, with funding of not less than \$0.5 billion for each year from FY 1986 to FY 1988 and up to \$1 billion for FY 1989 and FY 1990.

Areas in which the 1985 Act may significantly affect agricultural trade include wheat, sugar, beef, dairy products, rice, and cotton. With regard to wheat, where the U.S. is the largest supplier to the

1/ U.S. Department of Agriculture, Foreign Agricultural Service, World Production and Trade: Weekly Roundup, December 2, 1987.

world market, reduced loan rates together with various export promotion programs--particularly the export enhancement program--have been officially expected to enable the United States to capture a significant share of the growth in world wheat trade. 1/

In the case of sugar, the Act mandates that import quotas must henceforth be set so as to minimize loan forfeitures and to eliminate the cost to the Government. Thus the domestic price is maintained above the world price through the loan rate, while the cost of the program is shifted from the taxpayer to the consumer by tightening the existing import quota. It seems quite likely over the next few years--as domestic production responds to the high domestic price--that the required import quotas may have to be tightened to the point that eventually no further imports are permitted. The 1986 Annual Report of the Council of Economic Advisers suggested (page 138) that this approach could have adverse effects on a number of smaller countries that depend heavily for foreign exchange on exports of sugar to the United States. 2/

With respect to beef, the 1985 Act introduced the Dairy Termination Program, under which the Government buys herds of dairy cattle, in order to reduce excess dairy capacity, and the producer agrees to stay out of the dairy business for a specified period. In order to minimize the effects of this program on the domestic livestock industry, 400 million pounds of red meat were required to be bought by the CCC, of which 200 million pounds were to be exported. A sale of 198.4 million pounds of this surplus beef to Brazil at \$655/ton (33 cents per pound) was announced in May 1986. Through this mechanism the adverse impact of dairy herd reduction on the U.S. livestock industry has in part been shifted to foreign producers.

With regard to dairy products, the Act mandated disposal through export of 150,000 tons of CCC stocks, including 100,000 tons of butter at whatever price the CCC can obtain. This would represent a large share of the world market for dairy products.

With regard to both rice and cotton, the 1985 Act established a mechanism allowing producers to repay their loans at a preferential rate (the loan repayment rate) if the world price was below the announced loan rate. For 1986/87, the loan repayment rate was set below the loan rate for both commodities so that producers are effectively remunerated at a higher than market price. The purpose of the lower loan repayment rate was to allow U.S. prices to follow world market prices more closely

1/ The largest individual sale under the EEP to date was four million tons of wheat to the Soviet Union.

2/ In May 1986, it was announced that Caribbean Basin Initiative (CBI) countries hurt by lower U.S. sugar import quotas would be offered compensation in the form of surplus CCC stocks. Countries not participating in the CBI but subject to sugar import quotas (such as the Philippines and some African countries) would be offered compensation as long as their per capita income was below \$1,500.

and to minimize the storage of commodities under the program. In addition, a system of negotiable export marketing certificates was established for both rice and cotton, with the certificates issued to exporters and equal in value to the difference between the world price for the commodity and the loan repayment rate, should the latter exceed the former. This mechanism removes the incentive for delivery of commodities to the CCC and effectively subsidizes production for export, with adverse implications for other exporters of these commodities.

3. The U.S. proposal for multilateral reform

In the 1987 Annual Report of the Council of Economic Advisers, the problems of agriculture in the United States and abroad were reviewed and the central role of agricultural policies in the perpetuation of surplus production was stressed. An agenda for reform was outlined, acknowledging some of the failings of existing legislation. According to the Report, overproduction would continue as long as there were incentives to produce for government rather than the market. Supply management programs--such as acreage controls--were palliatives at best. The Report argued that government payments to farmers should be completely decoupled from production incentives--that is, they should be made on a lump-sum basis. Farmers selected to receive support should be given that support irrespective of what they produce or how much, so that production decisions would then be based on market conditions. The Report went on to note that simultaneous action by many countries to liberalize agricultural policies would have distinct advantages by making it easier for a particular country to implement reforms both in terms of the size of the adjustment costs and the political feasibility of gaining support for a program of liberalization. The Report noted, however, that even if other major countries did not join in a liberalization of agricultural policies, it would be in the interest of the United States to liberalize its own policies.

In early July 1987, the United States submitted a proposal for agricultural trade liberalization, designed to carry out the objectives of the Punta del Este Declaration on agriculture. The proposal suggested that all participants in the trade negotiations should agree to the following:

(i) a complete phaseout over ten years of all agricultural subsidies which directly or indirectly affect trade, and with regard to export subsidies, a freezing and phaseout over ten years of the quantities exported with the aid of export subsidies;

(ii) phased elimination of import barriers over ten years;

(iii) a harmonization of health and sanitary regulations.

The U.S. proposal suggested a two-tiered approach to the negotiations. First, techniques for measuring aggregate levels of support would be agreed upon and an overall schedule of reductions for taking

aggregate levels of support to zero over a ten-year period would be established. Second, each country would identify specific policy changes to meet its overall commitment of scheduled support reductions, and these policy changes would then need to be agreed to by the other contracting parties.

The proposal suggests that the measurement of aggregate government support provided by countries to their agricultural sectors should be based on the producer subsidy equivalent framework, discussed subsequently in Section V. The types of policies to be included in the measurement of support, and thus scheduled for eventual elimination, would include mechanisms of direct market price support and income support, as well as several other indirect sources of support including subsidized credit and insurance, fertilizer subsidies, marketing programs, and extension services. Under the U.S. proposal, the only types of policies to be excluded from phased elimination would be direct income or other payments decoupled from production and marketing and genuine foreign and domestic aid programs.

IV. Recent Developments in International Agriculture

As noted earlier, developments in the U.S. farm sector and U.S. agricultural policies are heavily linked with developments abroad. A prominent feature of recent research on the effects of agricultural policies and also of policy discussions themselves has been the attention paid to the international dimension. In this vein, the next several sections of this paper focus on international agricultural developments and the linkages of policies across countries.

The current difficulties in international agricultural markets stem from fundamental shifts in the demand for and supply of agricultural products and the failure of agriculture policies in major industrial countries to adjust to the new international situation. World trade in agricultural products has expanded rapidly until the early 1980s. However, in contrast to earlier periods, the growth in agricultural import demand in the 1970s was strongest among the developing countries, and to a lesser extent the centrally planned economies. In industrial countries, the growth in agricultural imports in the 1970s was more modest, reflecting slower rates of economic and population growth, a relatively low income elasticity of demand for agricultural products and, not least, the influence of domestic agricultural policies.

Agricultural policies, particularly in the European Community (EC), Japan, and the United States encouraged domestic agricultural production and restricted imports over this period. The bulk of the increase in world agricultural demand in the 1970s was in fact met by increased agricultural exports from the United States and the European Community. The policies pursued in Europe, Japan, and the United States provided an environment of relative security and returns in excess of those available on world markets for grain farming in Europe and Japan and for dairy

and sugar in the United States. Consequently, investment in agriculture rose. This rise, coupled with rapid advances in productivity, led to substantial increases in agricultural productive capacity, although the implications of this development were masked for a time by a continued rapid growth of demand.

The global recession of the early 1980s was accompanied by a slowdown in world trade which was particularly pronounced in the case of agriculture. The decline in oil prices depressed the demand for agricultural imports by oil exporting countries and several developing countries (and some centrally planned economies as well) which experienced serious difficulties meeting their external debt commitments. This development tended to compress their agricultural imports, and in some cases to raise their agricultural exports following currency devaluations. Moreover, economic reforms, productivity advances, and the introduction of new technologies raised agricultural production substantially in China and India in the late 1970s and early 1980s, sharply reducing--and in the case of India eliminating--dependence on imports of major food items.

World demand for agricultural products has thus increased less rapidly in the 1980s than in the previous decade. However, production in the exporting countries has adjusted only slowly to this development, which gave rise to large and growing stocks of agricultural products. To a substantial extent, this growing imbalance can be attributed to the domestic agricultural policies of the EC, Japan, and the United States. In the EC and the United States, policies have provided generous incentives for continued high levels of production in the face of reduced demand, while the policies pursued in Japan have had the effect of closing off a potential source of rising demand for agricultural products.

As discussed in detail in previous sections, the farm legislation implemented in the United States in 1985 (The Food Security Act of 1985) has increased the extent of pressure in international agricultural markets. The continuing EC policy of maintaining high domestic prices through trade restrictions, and then disposing of the resulting surplus on the world market also has helped to depress world commodity prices substantially. Meanwhile, the failure of Japan to release its potential for increased agricultural imports has worked in the same direction. Because domestic prices have been insulated and because international trade in most agricultural commodities accounts for only a small proportion of world output, the consequent declines in world prices have been more substantial than they might otherwise have been. Thus, the burden of adjustment to reduced growth of agricultural trade has been borne most heavily by those countries which are most heavily dependent on agricultural export earnings.

V. Protection in Agriculture--Extent and Costs

This section addresses the issue of measurement of the extent and the costs of protection in agriculture. The simplest measure of protection is the so-called "nominal protection coefficient (NPC)"--the ratio of the domestic price to the border price of a given commodity in a particular country. This measure is far superior to one based only on budgetary expenditures for agricultural support, because the latter would not incorporate the costs imposed when protection is provided by mechanisms that do not involve budgetary outlays, such as import restriction. Of course, nominal protection coefficients need to be interpreted cautiously, because of a variety of measurement difficulties and because agricultural policies of industrial countries influence both domestic and world prices. Moreover, with world prices varying much more than insulated domestic prices, the measured NPC can be sensitive to the choice of time period; the measurement of prices can make comparison problematic; quality variation can raise difficulties; and agricultural support provided as income supplements--rather than price support--may not be adequately captured. Data on nominal protection coefficients for the period 1980-82 are presented in Table 1.

Even with the various difficulties of interpretation, some conclusions can be drawn. First, it is apparent that dairy farmers receive generous protection in virtually all industrial countries, as do rice and sugar producers. Second, farmers in Europe and Japan receive more protection than do those in the United States. These figures do not permit any firm conclusions to be drawn as to the likely impact of multilateral liberalization, as such liberalization would not only equalize domestic and border prices but would affect world prices as well. Nevertheless, it appears that European and Japanese farmers would have the most to lose from liberalization and, by implication, that European and Japanese consumers would have the most to gain.

Several studies have been made of the impact of U.S. agricultural policies on the U.S. economy. In the Annual Report of the Council of Economic Advisers for 1986, it was estimated on the basis of pooled information from a variety of studies that for the 1984/85 crop year, U.S. farm programs caused an overall welfare loss of \$5.9 billion to \$6.9 billion. This loss comprised a producer gain of \$9.5 billion to \$12.2 billion, more than offset by a combined consumer and taxpayer loss of \$15.8 to \$19.0 billion.

A study by Bruce Gardner, ^{1/} prepared as background for the World Bank's 1986 World Development Report, focused on the potential impact of a termination of U.S. farm programs on a commodity by commodity basis. An essential yardstick in Gardner's approach was that, if program termination would lower (raise) the world price of a given commodity, then countries which export (import) that commodity would lose from termination, while those which import (export) would gain. According to this

^{1/} "Economic Consequences of U.S. Agriculture" by B. Gardner.

study, termination of the corn, wheat, rice, cotton, sugar, and tobacco programs in the United States would increase U.S. production and would lower world prices for those commodities thus benefiting importing countries and harming exporting countries. Exporting countries which would be injured by a unilateral termination of U.S. farm programs include Argentina (corn and wheat), Australia (wheat, rice, and sugar), Brazil (tobacco), Canada (wheat), France (corn and wheat), Thailand (corn and rice), and large groups of LDC exporting countries with respect to sugar and cotton. Those countries would lose primarily because of a lower world price for the relevant commodities; but, they would also lose because of a reduced volume of exports; U.S. production would be increased by the ending of acreage controls and the expanded U.S. supply would find its way to the world market rather than into CCC stocks.

Gardner estimated that U.S. farm programs for the 1984/85 crop year would result in producer gains of \$14 billion, a loss by consumers and taxpayers of \$19 billion, and an overall welfare loss of \$5 billion; these figures are similar in magnitude to the ranges presented in the 1986 CEA report, cited earlier.

A major recent study by the U.S. Department of Agriculture (USDA) has attempted to quantify the level of protection for agriculture in major countries or country groupings, on a commodity by commodity basis. ^{1/} The calculations are made in terms of a producer subsidy equivalent (PSE)/consumer subsidy equivalent (CSE) approach. This framework was pioneered at the OECD in its research on agricultural policies and trade, designed to provide an analytical foundation for the forthcoming multilateral negotiations. By providing an analytical tool on the use of which most countries can agree, this framework is a major step forward. The producer subsidy equivalent or PSE is defined to be the level of subsidy that would be necessary to compensate producers for removing government support under existing programs. ^{2/} Taken together, these two measures indicate the net transfer into agriculture from other sectors, through the public sector. PSEs are calculated as ratios of government transfers to producers to total agricultural income, and CSEs as ratios of the value of government transfers to consumers to total consumer spending on the commodity in question. In principle, PSEs and CSEs may be positive or negative.

As with any summary measure, there are drawbacks and difficulties associated with both PSEs and CSEs. Comparison of domestic and external prices is a major component of the approach, and has several drawbacks, as was noted earlier in the discussion of nominal protection coefficients. First, the results may be quite sensitive to the choice of time

^{1/} U.S. Department of Agriculture, Economics Research Service, Government Intervention in Agriculture: Measurement, Evaluation and Implications for Trade Negotiations (January 1987).

^{2/} The consumer subsidy equivalent (or CSE) is defined in a similar way.

period because world prices typically fluctuate more than domestic prices. Second, the agricultural policies of large countries affect world prices as well as domestic prices.

The results of the USDA study permit analysis of several different issues. First, assistance/taxation levels within a particular country can be compared across commodities. For the United States, these calculations are summarized in the tabulation below; they indicate that as of 1982-84, production of sugar and rice was most heavily subsidized, with production of sorghum, corn, wheat, dairy products, and cotton over the same period subsidized in a middle range, while soybeans, pork, poultry, and beef were subsidized least.

Ranking of Producer and Consumer Subsidy Equivalent
Levels by Commodity for U.S. Agriculture, 1982-84 1/

(In percent)

	<u>Producer Subsidy</u>	<u>Consumer Tax</u>
0-9 percent	Soybeans, pork, poultry, beef	Beef, pork, poultry
10-24 percent	Barley	Cheese, fluid milk
25-49 percent	Sorghum, corn, wheat dairy, cotton	Butter
50-74 percent	Sugar, rice	Sugar
75-99 percent	--	--
100 percent plus	--	--

The USDA study also calculated weighted average subsidy equivalents across commodities for different countries, permitting some broad brush comparisons of the overall level of assistance to agriculture. On this basis, the USDA study calculated Japan as having an average producer subsidy equivalent in agriculture of 70 percent in 1982-84, compared with 41 percent for the European Community and 22 percent for the United States.

1/ The data are taken from the U.S. Department of Agriculture, Economics Research Service, Government Intervention in Agriculture: Measurement, Evaluation and Implications for Trade Negotiations (January 1987).

In its continuing research on the impact of agricultural policies, the OECD--which, as noted, pioneered the use of subsidy equivalents--also has made calculations of the magnitudes of PSE, although the time period covered--1979 to 1981--is less recent than that of the USDA study just cited. The overall picture is similar in both studies, although there are differences of detail. In the OECD study, Japan has the highest weighted average PSE at 59 percent; the estimated weighted average PSE for the EC countries was 43 percent, well above the OECD average of 32 percent. ^{1/} The corresponding figure for the United States was 16 percent. None of the nine commodity-specific PSEs computed for the United States exceeded the OECD average for the commodity; for Japan only one out of nine, and for the EC two out of nine, were below the OECD commodity averages.

In sum, the studies cited here indicate the existence of high levels of protection for agriculture in the United States, with large associated costs. Yet, levels of agricultural protection and the costs of such protection in the EC and Japan appear to be much higher still. The implication is that agricultural protection in these countries is associated with large welfare losses, and therefore trade liberalization would promise substantial welfare gains.

VI. Agricultural Policy Reform

This section of the paper provides a survey of various research studies, analyzing the possible impact of a major reform of agricultural policies in one or more countries. As the volume of research has grown, the models employed have become increasingly complex and sophisticated. Even so, the qualitative structure of the results can usually be traced in an intuitive fashion.

1. Early studies

One major study of the potential effects of agricultural trade liberalization was conducted by Valdes and Zietz. ^{2/} It examined the results of a hypothetical 50 percent across the board reduction in tariffs and other trade barriers on 99 agricultural commodities in 17 OECD countries, based on data for 1975-77. The results were that LDC export earnings would rise by about 11 percent as a result of liberalization, or by enough to finance close to 40 percent of LDC cereal imports. The major increases in industrial country agricultural exports would occur in the United States, Canada, Australia, and New Zealand, while France and Italy would experience a substantial reduction in agricultural exports. In addition, Japan, Germany, the United Kingdom, and Italy would undergo a substantial increase in the value of agricultural

^{1/} Data are provided in Table 2.

^{2/} A. Valdes and J. Zietz "Agricultural Protection in OECD Countries: its Cost to Less Developed Countries" Research Report 21, International Food Policy Research Institute, December 1980.

imports. The extent of protection for agriculture has increased substantially since this study was developed, which would suggest that the results of a similar study on more current data would indicate even more pronounced effects. The qualitative message is that the chief beneficiaries (in terms of increased exports or reduced imports) of a large scale liberalization of agricultural trade would be the LDCs, the United States, Australia, New Zealand, and Canada, at the expense of Europe and Japan.

A later study by the same authors 1/ examined the potential effects of trade liberalization in wheat, corn, beef, and sugar. The results indicated that trade liberalization in cereals would likely lead to a net welfare loss for LDCs as a whole, because liberalization would raise cereals prices, and LDCs are net importers of these products. LDCs which export cereals would of course gain. Most of the gains from trade liberalization in cereals would accrue to the United States, Canada, and Australia, at the expense of the EC countries. By contrast, trade liberalization with respect to sugar and beef would yield substantial welfare benefits to LDCs, and almost exclusively to them. Among the developed countries, Australia and the United States would have by far the most to gain from trade liberalization in beef. The changes in the pattern of exports and imports across industrial countries would be qualitatively similar to the earlier study.

2. The Tyers/Anderson study

Another major study 2/ was prepared for the 1986 World Bank World Development Report. The model is perhaps the most ambitious of its kind and covers 7 commodity groups including grains, livestock, and sugar, and divides the world into 30 countries or country groupings (e.g., the United States, the EC, Japan, and LDCs). On the basis of 1980-82 data, the seven commodity groupings cover three quarters of agricultural trade and one tenth of all world trade. An effort was made to analyze the linkages between commodities in production and consumption (such as, for example, the use of corn as feed for livestock). A major distinguishing feature is the fact that the "small country assumption" is relaxed--that is, when the potential impact of major policy changes in the United States or the EC, for example, are analyzed, the model yields estimates of the effect on world prices, as well as domestic prices. In common with most other models used in this field, the system is partial equilibrium in the sense that the overall macro-economic environment--in terms of prices, activity, interest rates, exchange rates, and the like--is effectively held constant when agricultural policy changes are analyzed.

1/ "The Costs of Protectionism to Developing Countries: an Analysis for Selected Agricultural Products" World Bank Staff Working Paper No. 769, January 1986.

2/ Tyers, R. and K. Anderson, "Distortions in World Food Markets: a Quantitative Assessment", background paper prepared for the 1986 World Development Report.

The paper by Tyers and Anderson presents estimates of the domestic welfare costs of agricultural policies as they existed in 1985 for major country groupings (see Table 3). The European countries and Japan show large welfare costs of existing policies. The results for the European countries and Japan suggest that existing policies are inefficient in achieving the objective of raising producer incomes, as evidenced by their high transfer ratios. Surprisingly, and contrary to the results of other studies, U.S. farm policies are estimated to provide a net welfare gain to the U.S. economy. This result is explained by the authors as indicating that the farm policies existing at the time the study was undertaken enabled the United States effectively to exploit some of its market power in world agriculture; such a result is ruled out in most other studies by imposition of the "small country" assumption--that is, the assumption that changes in domestic policies do not influence world prices. This surprising result underpins some of the estimates outlined below; it would almost certainly be reversed if more recent data were employed, inter alia because of the spiraling taxpayer cost of U.S. agricultural programs. 1/

The heart of the study by Tyers and Anderson is a set of simulations of the impact of liberalization of agricultural policies by one or more major country groupings with respect to one or more major commodity groups. The model is specified in sufficient detail that policy experiments can be conducted, simulating the impact of agricultural liberalization commodity by commodity, and country by country. The paper provides a wealth of quantitative detail, but only the broad qualitative features can be reviewed here. A unilateral liberalization of U.S. agricultural policies as regards grains, livestock, and sugar would raise world prices of wheat, dairy products, and sugar while lowering those for coarse grains, rice, and meat; 2/ the degree of instability of world agricultural prices would generally decline, and the volume of trade in agriculture would rise.

A unilateral liberalization of EC agricultural policies was estimated to raise world agricultural prices across the board, to reduce substantially the degree of instability of these prices, and by and large to raise trade volumes. The estimated welfare gain to the EC countries was 0.9 percent of GNP. A liberalization of agricultural policies in Japan without action elsewhere also would raise world prices across the board, though by somewhat less than the EC liberalization, except for rice. World price instability would be reduced, though again by less than in the case of EC liberalization, and the volume of trade would generally rise. The estimated welfare gain to Japan from such a

1/ When the paper was being prepared, the Food and Security Act of 1985 was about to be passed; the version of "current policies" employed appears to be those prior to that legislation.

2/ The negative effect on world prices for coarse grains, rice, and meat would reflect increased U.S. production and export of those products, induced by the termination of the supply restrictions that are a component of current agricultural programs.

liberalization would be equivalent to 2 1/4 percent of GNP. The larger estimated effects of EC liberalization with respect to both agricultural price levels and their variability reflect both the size of the EC and the nature of its policies. Except for rice and milk, EC policies are estimated to have more impact on agricultural price levels than the combined effects of the agricultural policies of all industrial market economies. The EC system of variable import levies and variable export restitutions ensures little domestic price variation, with the result that any domestically generated supply fluctuations affect world prices rather than domestic prices.

According to Tyers and Anderson, a simultaneous liberalization of agricultural policies by all industrial countries would lead to major increases in world agricultural prices, a pronounced decline in price instability, and a substantial rise in the volume of agricultural trade. The estimated impact of simultaneous liberalization on the level and variability of prices and on the volume of world trade would be greater than in the case of unilateral liberalization by any major country, or country grouping. The estimated welfare effects would include a gain of 0.8 percent of GNP for the EC countries, a gain of 1.9 percent of GNP for Japan, and a loss of 0.1 percent of GNP for the United States--the latter outcome reflecting the fact that the model employed suggests that U.S. agriculture policies, as they existed at the time the study was written, conferred a net benefit to the U.S. economy. LDCs as a group are estimated to suffer a net welfare loss from an industrial country liberalization of agricultural policies because the representative LDC is a food importer and liberalization would raise prices. However, traditional food exporting countries among LDCs would gain.

The induced shifts in the pattern of agricultural trade are largely in accord with notions of comparative advantage. There would be increased net exports of wheat and grain by the United States, decreased net exports of these goods by European countries, and, surprisingly, reduced wheat and grain imports by Japan. ^{1/} Net imports of sugar would increase for all industrial countries except the EC and Australia; there would be higher net imports (lower net exports) of rice in all industrial countries; increased net imports of meat for Europe and Japan, and higher net exports of meat for Australia, Canada, and the United States.

Two further results should be mentioned. First, according to a further set of simulations, a global liberalization of agricultural policies by all countries, including LDCs, would benefit both LDCs and industrial countries as groups. Second, a policy of agricultural export subsidization by the United States--as implemented in the Food Security Act of 1985, after the study was completed--while helping U.S. producers, would impose net additional costs on the economy as a whole and would have a larger negative impact on agricultural exporting countries such as Argentina, Australia, Canada, and New Zealand than on its

^{1/} Because liberalization would reduce Japan's domestic livestock production and thus the demand for grain as feed.

intended targets--namely other countries which subsidize agricultural exports substantially. Furthermore, the budgetary cost to the United States would far exceed the cost imposed on competitors who also subsidize.

Overall, the results indicate that simultaneous liberalization of agricultural policies would reduce domestic producer prices less in general than would unilateral liberalization by a particular country or country grouping. If the liberalization were to be phased in gradually over several years, the annual producer price adjustments would be minor except for the most highly protected countries and commodities. Thus, a multilateral approach to liberalization of agricultural policies, in addition to possible political advantages in terms of building a coalition of support, would have the advantage of reducing the magnitude of the adjustment costs--because the drops in domestic producer prices would be smaller--relative to unilateral liberalization.

3. OECD studies

As part of its continuing research effort on agricultural policies and with a view to laying a foundation for the forthcoming trade negotiations, the OECD has developed a model of international agriculture (the Ministerial Trade Mandate Model or MTM). ^{1/} The model focuses on the medium term and is of a partial equilibrium nature; it yields medium-term estimates of the impact of policy changes, without tracing the adjustment path, and holds major macro-economic variables constant. All OECD countries are covered--some as country groupings rather than individual countries--and there are additional model blocs for the centrally planned economies and the rest of the world. The commodities covered comprise milk, beef, pork, poultry, lamb, wool, wheat, coarse grains, sugar, rice, rapeseed, manioc, and corn gluten feed.

Several simulations were conducted, all comprising a reduction of assistance to agriculture of 10 percent, implemented in a variety of ways. The results discussed here are based on a reduction of 10 percent of agricultural assistance for all commodities in all countries. OECD production and the volume of trade for exported commodities would fall, while increases in trade volumes would occur for those commodities imported by the OECD. World prices would fall for most commodities. It was estimated that agricultural production would fall marginally in the United States, and much more substantially in Europe and Japan. The United States would increase the value of its net agricultural exports, though only by a little, while the value of net agricultural imports in Europe and Japan would rise. The United States would experience an increase in net exports of wheat, coarse grain, and poultry, a reduction in net exports of soybeans, a rise in net imports of dairy products, and a fall in net imports of beef and pork.

^{1/} OECD, "The Market Impacts of Reducing Assistance", Chapter III of National Policies and Agricultural Trade, May 1987.

VII. Conclusion

The agricultural sector in the United States has experienced crisis conditions in recent years, as commodity prices declined, interest rates were high in real terms, and, until early 1985, the value of the U.S. dollar was rising, making it increasingly difficult for U.S. farmers to compete internationally. In part, these difficulties can be seen as an unfortunate consequence of the process of disinflation in the early 1980s, which invalidated the expectations on the basis of which earlier economic decisions had been made and caused sharp and unanticipated shifts in relative prices. More recently, with the decline in the exchange value of the dollar, the economic situation of the U.S. farm sector has stabilized somewhat. However, the major element permitting some stabilization has been the continued high level of government support for farm incomes. Government support for agriculture, while cushioning farm incomes, has exacerbated the turbulence in international agricultural markets and has imposed substantial welfare costs on the U.S. economy as a whole.

The United States has made changes in agricultural policies, in particular in the Food Security Act of 1985. These changes have sought to increase the market orientation of U.S. policies, but also to continue to provide a cushion of support for U.S. producers. These apparently conflicting objectives have in part been reconciled by a turn toward subsidization of production for export, a procedure which has proved controversial among other exporting countries. In world markets, the growth of demand for agricultural products has slowed in the 1980s, but production decisions in major countries have been insulated from this slower growth by domestic agricultural policies. The result has been increasing overproduction and sharply rising stocks of agricultural products. With the agricultural sectors of major industrial countries protected from declining world prices, the burden of adjustment has fallen most heavily on those countries which depend on agricultural exports to earn foreign exchange. The costs to the major industrial countries in terms of budgetary outlays and increased consumer prices are high and rising.

The events described above have led to renewed efforts to achieve a liberalization of agricultural policies in industrial countries through multilateral negotiations. According to the estimates presented in the studies reviewed here, the welfare gains from a multilateral liberalization could be very substantial; the bulk of the gains would accrue to the countries with the highest levels of assistance for agriculture, because of the large domestic costs imposed by those assistance policies. There are of course likely to be transitional and distributional costs associated with such a process. One advantage of a multilateral approach to agricultural liberalization would be the fact that such an approach would mitigate the extent of these adjustment costs.

Table 1. United States: Nominal Protection Coefficients (NPCs) for Producer and Consumer Prices of Selected Commodities in Industrial Countries, 1980-82

	Wheat		Coarse Grains		Rice		Beef and Lamb		Pork and Poultry		Dairy		Sugar		Weighted Average	
	Pro- ducer NPC	Con- sumer NPC	Pro- ducer NPC	Con- sumer NPC	Pro- ducer NPC	Con- sumer NPC	Pro- ducer NPC	Con- sumer NPC	Pro- ducer NPC	Con- sumer NPC	Pro- ducer NPC	Con- sumer NPC	Pro- ducer NPC	Con- sumer NPC	Pro- ducer NPC	Con- sumer NPC
Australia	1.04	1.08	1.00	1.00	1.15	1.75	1.00	1.00	1.00	1.00	1.30	1.40	1.00	1.40	1.04	1.09
Canada	1.15	1.12	1.00	1.00	1.00	1.00	1.00	1.00	1.10	1.10	1.95	1.95	1.30	1.30	1.17	1.16
EC <u>1/</u>	1.25	1.30	1.40	1.40	1.40	1.40	1.90	1.90	1.25	1.25	1.75	1.80	1.50	1.70	1.54	1.56
Other Europe <u>2/</u>	1.70	1.70	1.45	1.45	1.00	1.00	2.10	2.10	1.35	1.35	2.40	2.40	1.80	1.80	1.84	1.81
Japan	3.80	1.25	4.30	1.30	3.30	2.90	4.00	4.00	1.50	1.50	2.90	2.90	3.00	2.60	2.44	2.08
United States	<u>1.15</u>	<u>1.00</u>	<u>1.00</u>	<u>1.00</u>	<u>1.30</u>	<u>1.00</u>	<u>1.00</u>	<u>1.00</u>	<u>1.00</u>	<u>1.00</u>	<u>2.00</u>	<u>2.00</u>	<u>1.40</u>	<u>1.40</u>	<u>1.16</u>	<u>1.17</u>
Weighted average <u>3/</u>	1.19	1.20	1.11	1.16	2.49	2.42	1.47	1.51	1.17	1.17	1.88	1.93	1.49	1.68	1.40	1.43

Source: World Bank World Development Report 1986, pp. 112 and 113.

1/ Excluding Greece, Portugal, and Spain.

2/ Austria, Finland, Norway, Sweden, and Switzerland.

3/ Also including New Zealand.

Table 2. OECD Countries: Producer Subsidy Equivalents (PSEs)
by Commodity and Country 1/

(Averages 1979-81, in percent)

	United States	Canada	European Community	Japan	Other Europe <u>2/</u>	Total OECD <u>3/</u>
Dairy	48	67	69	83	71	64
Wheat	17	18	28	96	57	22
Coarse grains	13	13	28	107	55	19
Beef and veal	10	13	53	55	62	30
Pigmeat	6	15	22	14	24	17
Poultry	6	26	16	21	43	14
Sugar	17	13	25	48	33	27
Rice	5	...	14	69	...	61
Sheepmeat	...	...	45	...	64	29
Wool	...	...	...	...	--	9
Soybeans	7	...	36	108	...	9
Average, all above commodities	<u>16</u>	<u>24</u>	<u>43</u>	<u>59</u>	<u>56</u>	<u>32</u>

Source: OECD, "The Concept and Measurement of Producer Subsidy Equivalents and Consumer Subsidy Equivalents", Annex II to National Policies and Agricultural Trade (May 1987), Table 2.

1/ A PSE attempts to measure the payment or subsidy needed to compensate producers for the removal of agricultural producer support policies (expressed here in percent of the value of output) plus direct payments minus any producer levies or taxes.

2/ Denmark, Finland, Iceland, Norway, and Sweden.

3/ Includes all OECD countries.

Table 3. Domestic Costs of Food Price Distortions in 1985

(Billions of 1980 dollars)

	Consumer Cost (1)	Taxpayer Cost (2)	Gross Cost (3)=(1)+(2)	Net Cost ^{1/} (4)	Producer Benefit (5)	Transfer Ratio ^{2/} (6)=(3)/(4)
Canada	1.90	1.03	2.93	0.5	2.42	1.21
EC-10	49.02	2.22	51.24	24	27.22	1.18
Japan	44.18	-4.51 ^{3/}	39.67	27	12.37	3.21
United States	16.84	2.36	19.20	-1	20.43	0.94

Source: Tyers, R. and K. Anderson, "Distortions in World Food Markets: a Quantitative Assessment", background paper prepared for the 1986 World Bank World Development Report.

^{1/} Column (3) minus column (5) minus stock profits (not shown here).

^{2/} Ratio of gross costs to producer benefits--that is, the average cost in dollars to consumers/taxpayers per dollar transferred to producers.

^{3/} Government tariff revenue on imports of food exceed payouts to producers to raise support levels above consumer prices in Japan.

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