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Part IV. Postwar Policies Relating to
Trade in Agricultural Products

The objectives of this review article are limited ones. The first objective is to show that there has been only a modest elimination of the conflicts between domestic agricultural policies and foreign trade policies in the world over the past quarter century. The second objective is to note and describe some of the policy analyses concerned with international trade in agricultural products and the conflicts between domestic and trade policies. The third objective is to present some important areas of research that have been neglected but that show promise of contributing to the possible resolution of the conflicts between domestic and trade policies and to the improved functioning of international markets.

It should be made clear that the literature review component of the article is selective. For instance, the review barely touches on the enormous analytical and policy literature on international trade and economic affairs. A significant part of this literature has been reviewed in recent years, especially in major articles in the *Journal of Economic Literature* [44, 45, 69]. Even within the rather confined scope of this article, the approach has been selective and illustrative rather than exhaustive. The potentially relevant bibliography is enormous. A bibliography prepared under the direction of Lawrence Witt almost a decade ago [13, part 3] and described as "an introduction to the literature on Food for Peace and on the use of surplus agricultural commodities in programs of assistance to developing countries" included 950 entries. Thus the failure to include an article, a monograph, or a book should not be interpreted as an indication that the particular contribution was unimportant or was flawed.

I am indebted to Barbara Blair and Deputy Director Carmen O. Nohre of the Foreign Demand and Competition Division, Economic Research Service, United States Department of Agriculture, for making available to me a listing of the references numbered [89] through [175].

D. G. J.

Postwar Policies Relating to Trade in Agricultural Products

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Domestic and International Policy Conflicts

For at least four decades the United States has followed an ambivalent and inconsistent set of policies for trade in farm products. At no time were the conflicts between a liberal trade policy that would guide farm production in the directions implied by the principle of comparative advantage and the needs of domestic farm programs that required substantial interferences with international trade, for both imports and exports, resolved. Yet progress was made.

The United States was far from alone in the difficulties of resolving such conflicts. Numerous individual countries as well as such groups of countries as the European Economic Community have struggled with the seemingly inconsistent objectives of expanding international trade while vigorously protecting domestic agriculture. A significant part of the economic conflicts between Western Europe and the United States have arisen over the desire of the former to protect its agriculture from external competition and the efforts of the latter to expand exports in order to employ its farm resources fully.

Policy Conflicts at the End of World War II

Two somewhat lengthy quotations from the debate over the postwar farm and trade policy of the United States present in clear fashion the basic nature of the conflicts. Further, the quotations, the first from 1947 and the second from 1946, indicate how little the nature of the conflicts has changed in a

quarter century. The first quotation can be said to represent the official position of the Department of Agriculture, since it is from the testimony of Carl Farrington before a joint congressional committee concerned with long-range agricultural policy [70, pp. 171-172]. The second is from a report entitled *Postwar Agricultural Policies* by the House Special Committee on Postwar Economic Policy and Planning, chaired by William M. Colmer [81, pp. 24, 33-34].

Foreign policy: We would be remiss if, in the formation of our domestic agricultural program, we did not give careful consideration to its relationship to international trade and the foreign policy of our government.

... in spite of adjustments in our pattern of production, we still need foreign markets for some commodities, such as cotton, wheat, tobacco, lard, rice, and certain fruits and vegetables. We know the great effort which our Government has devoted to breaking down barriers to trade throughout the world. We also know that price supports for farm commodities here in the United States also require a certain degree of protection through tariffs or other trade barriers. Without them foreign producers might flood our domestic market, with our Government buying the domestic production. In addition, it tends to become difficult to export farm products without an export subsidy. These trade barriers are in conflict, although not wholly irreconcilably, with our repeated declarations of a national policy which seeks international cooperation in reducing trade barriers. As long as this conflict exists, the best hope of reconciling it without increasing the burden on the United States taxpayer is in the possibility that international agreements can be negotiated for the individual commodities involved. Such agreements could recognize the special problems of such commodities and, in effect, lift them out of the general consideration of international trade practices for the duration of the agreements. In this way they could preserve the principle of international economic collaboration without sacrificing agriculture's interest.

... For the next few years, at least, we will need to continue having available section 32 funds to bridge the gap between domestic and world prices for some commodities which we export.

We recommend that section 32 of the Agricultural Adjustment Act be made applicable to all programs of the Department, particularly to programs of price support, inasmuch as imports could, as previously indicated, seriously interfere with the operation of any price-support program.

If a price is maintained at a level above that necessary to balance supply with demand, it tends to maintain production at levels in excess

of market demand. Two alternative programs must then be considered; either production and marketing quotas must be established, or the surplus must be disposed of at lower prices by dumping abroad or by subsidized consumption at home. The committee believes that neither of these policies can be expected to yield the best results over the long run for the following reasons: (1) Production controls tend to maintain high-cost production and restrict expansion in low-cost areas as technological changes reduce costs. This is particularly true when acreage controls are made on an historical basis. At the same time prices to consumers are maintained at a high level, and the Nation as a whole is prevented from enjoying the benefits of lower costs resulting from improved techniques of production. (2) When production is not restricted, the Government is forced to buy up the surplus and take the loss involved through sale at a lower price.

... When prices are maintained on the domestic market and exports subsidized, other nations retaliate by applying similar export subsidies because the action of the Nation dumping its surpluses abroad tends to depress the world price. Any initial benefits are rapidly destroyed, world prices become less stable, and international friction is generated.

We suggest that the following principles be given serious consideration as embodying the objectives toward which we should work: (1) The support levels should be such that they would be below the levels that would balance the expected supply and demand of various products, and they should vary from year to year as supply and demand conditions change. (2) Except in the case of demoralized world market situations (against which the international cooperative arrangements discussed above might be invoked) support prices for export commodities should not exceed the prices expected to prevail on the world market over the production period.

The Department of Agriculture, while aware of the conflict between its programs and a liberal trade policy, was not prepared to equalize domestic and international prices but instead wanted to continue export subsidies and import quotas. It held out hope for the negotiation of international agreements that in effect would put farm products in a special category not bound by the principles of liberal trade. The Colmer Committee argued that in the long run prices could not be maintained at a level above that which would equate market demand with production and that efforts to do so would result in either the extensive use of export subsidies or production controls that would maintain high-cost production and high prices to consumers.

United States farm and trade policy has continued to be torn between the need to expand exports of some farm products — because otherwise the domestic adjustment problems could be met only by programs that were too

costly to be politically viable — and the unwillingness to reduce significantly its barriers to the imports of several farm products that are produced at a comparative disadvantage. Although the support prices of major export products were aligned with international prices, export subsidies continued to be used extensively for wheat until September 1972. Export subsidies have been used to dispose of products of which we are not low-cost producers. In the absence of trade distorting measures would import rather than export, such as manufactured dairy products.

The conflict between domestic farm programs that result in market prices being maintained above world market levels and a liberal trade program has not yet been resolved for a rather simple reason — *it cannot be resolved*. However, during the 1960s support measures were adopted for cotton and the feed grains that resulted in a significant reduction in the interference with international trade while maintaining acceptable levels of returns to farmers.

United States Trade in Farm Products

As late as 1890 agricultural exports accounted for 75 percent of all United States exports. Over the next two decades the percentage declined to 50 percent; by the end of the 1920s only a third of total exports consisted of farm products. During the 1930s total exports and agricultural exports both declined, but farm exports declined the most [80, pp. 4-5]. The low point was reached in 1940 when agricultural exports fell to 9 percent of total exports, owing in large part to the outbreak of war in Europe. In the years following World War II agricultural exports increased in value and quantity and as a percentage of total exports. They declined again after 1951 and stagnated until 1957. Between 1957 and 1972 farm exports accounted for about a fifth of total exports [79].

Two measures of the importance of exports to agriculture are commonly used. One is the percentage of harvested acreage used for producing export products; the other is the percentage of cash farm receipts accounted for by the marketing of exports [79 (1952, 1972); 80, p. 10]. In 1910 approximately 12 percent of the cropland harvested was exported directly as a crop or indirectly as feed for livestock. During World War I and its aftermath about 16 percent of cropland output was exported, but the percentage declined gradually to a low of only 5 percent in 1935 and 1936. By the late 1940s the percentage had increased to nearly 15 percent. There were significant fluctuations in the percentage during the 1950s, ranging from less than 10 percent in 1953 to 19 percent in 1956. With some decline in cropland harvested and a significant increase in the use of land for exports, an all-time high (at least until 1972-73) was reached in 1963 when almost 26 percent of all crop-harvested area was used for export products. Approximately the same percentage

was achieved in 1970 [51]. Thus measured by the cropland used for exports, the relative dependence of United States agriculture on exports is now substantially higher than it was before World War II.

Before World War II the value of farm exports was about 16 to 18 percent of the value of farm marketings; a peak of 28 percent was reached in 1918. The value of farm exports declined to less than 10 percent during the 1930s and increased to 12 percent in 1951; it declined to 9 percent in 1953 and slowly increased to 16 percent in 1957. Until 1972 exports fluctuated between 12 and 16 percent of cash receipts [79]. With the increased volume and price exports realized in 1973 and 1974, exports equaled or exceeded 20 percent of cash receipts [14].

Farm Programs and Trade Interferences

In retrospect it appears that there were three major periods of development of farm programs between 1933 and 1960. Each came into being at a time when the importance of exports to agriculture was low and/or declining.

The first period of development, when the basic framework of United States farm policy was determined, was 1933 through 1938; during this period exports accounted for a very small fraction of cash farm receipts and offered an outlet for relatively few cropland acres. It included three years in which the United States was a net importer of grains, an unprecedented occurrence.

Another major review of domestic farm programs occurred in 1947-49. In testimony to Congress in 1947, Assistant Secretary Charles F. Brannan presented projections of exports for 1950, but in terms of what was "assumed to be normal for future years . . ." [70]. For several important export products the projections were gloomy indeed. Wheat exports were projected at only 100 million bushels, only half above the low levels of 1937-41. Cotton exports of 3.5 million bales were projected, less than in 1937-41. Only tobacco exports were projected at levels that approximated prewar periods of reasonable world prosperity. Thus it is perhaps not surprising that at this time Congress gave little thought or emphasis to the conflict between domestic and trade programs.

Finally, after the change in national administration and the ending of price support commitments made in the Agricultural Act of 1949, an effort was made in 1953-54 to modify farm price support programs significantly. Little or nothing was accomplished with respect to domestic programs; the major piece of legislation affecting agriculture and trade was the Agricultural Trade Development and Assistance Act of 1954. This act was in response to three interrelated phenomena—very good crops in 1952 and 1953, a decline in exports of about a third from 1951 through 1953, and a substantial increase in

stocks held by the Commodity Credit Corporation. By mid-1954 the value of CCC inventories was three and a half times the value two years earlier and loans outstanding were six times as large. The total of loans outstanding and commodities owned increased from \$1.46 billion on June 30, 1952, to \$6.0 billion two years later [79].

The 1950s fully confirmed the major points made by the Colmer Committee. The maintenance of price supports substantially above equilibrium levels required efforts to limit production and resulted in substantial stock accumulations and efforts to expand exports.

The first major response to the accumulation of grain stocks by the Commodity Credit Corporation was Public Law 480, the Agricultural Trade and Development and Assistance Act of 1954. Among the objectives of P.L. 480 were "to promote the economic stability of American agriculture and the national welfare, to make maximum efficient use of surplus agricultural commodities in furtherance of the foreign policy of the United States and to facilitate the expansion of foreign trade in agricultural commodities produced in the United States by providing a means whereby surplus agricultural commodities in excess of the usual marketings of such commodities may be sold through private trade channels and foreign currencies accepted in payment therefor." P.L. 480 has been revised several times, but it has served as the basis for our food aid programs and, until the mid-1970s, a primary method of disposing of agricultural products to the developing countries.

In the late 1950s and early 1960s agricultural exports began to increase, and price support policy was gradually changed for cotton, wheat, and the feed grains to improve the competitive position of the United States in world markets. Price supports were lowered to levels that were at or below export prices; this transition was completed by 1966. The market prices were generally aligned with export prices and the role of export subsidies was diminished, and the average return for the major crops was approximately maintained by direct payments to program participants.

The change in price support policy was not as effective as we might have hoped in eliciting responses from our trading partners. There were several reasons for this. First, the United States continued to use export subsidies until international market prices increased substantially in late 1972. Although it was true that the reliance on export subsidies declined, the United States never said that it would abandon the payment of export subsidies and still has not so declared. In fact, the cost of export subsidies was greater in 1970-71 than in 1966-67 or any subsequent period. Export subsidy costs were nearly as high in 1971-72 as in the previous year [14, April 1974, pp. 30-31]. Second, a convincing case was never made that the combination of price support and diversion payments and the diverted acreage had a significant effect on

the level of production in the United States. Thus foreign farm groups and governments did not look simply at farm market prices but added in all of the payments and did not find the price disparities as large as we implied. Finally, it appeared that the United States was a liberal trader only for its export products and seemed to be about as protectionistic as anyone else when it came to dairy, peanuts, wool, sugar, and beef [86, 41].

During the period since World War II the United States has engaged in several negotiations to reduce the barriers to trade in all products, including agricultural products. The first effort culminated in the General Agreement on Tariffs and Trade (GATT), which was not only a negotiation about specific trade barriers but also an effort to devise a code of behavior for international trade. The General Agreement on Tariffs and Trade included exceptions to its general rule that the only legitimate trade barriers were import and export duties. These exceptions were made largely at the insistence of the United States [85] to permit the operation of domestic farm programs without significant interference from international trade. Quantitative restrictions were permitted when required for the enforcement of domestic production controls, marketing controls, or surplus disposal programs. Export subsidies were also permitted for essentially the same reasons. Neither quantitative restrictions nor export subsidies were to be used to change the pattern of trade, but the General Agreement on Tariffs and Trade has never developed adequate criteria for determining when such measures either restrict trade, as in the case of quantitative restrictions, or significantly expand exports, as in the case of export subsidies [78, *Papers*, vol. I, pp. 859-871].

Economists have discussed the numerous conflicts between domestic farm programs and a liberal trade policy. D. G. Johnson [35] outlined the major sources of conflict and indicated changes in domestic farm programs that could be made to remove most, if not all, of the conflict. Hardin [26] edited a special issue of *The Annals* which dealt largely with the interrelationships between agriculture and foreign policy. A volume edited by Tontz [71] included examples of economists' contributions to the discussion since World War II.

Most of the economists who wrote on the subject argued that the United States should remove the conflicts by significant modifications in its farm programs that would permit removing Section 22 import quotas and abolishing the use of export subsidies. The modifications included the reduction of price support levels and programs to encourage long-run resource adjustments through improved labor mobility and the achievement of income objectives by measures that would have minimum effect upon farm output [26, 35]. It should be noted that a case also has been made in favor of the United States farm and trade policies. As an example, Ioanes [71] argued that the United

States alone among major countries has tried to manage supplies, has had responsible stockpiling practices, and has thus added considerable stability to world supplies and prices of several important farm products.

Farm and Trade Policies of Other Countries

The inconsistency between domestic farm programs and a liberal trade policy is no monopoly of the United States. Two excellent reviews of the agricultural policies of the major industrial countries have been made by the Organization for Economic Cooperation and Development and its predecessor, the Organization for European Economic Cooperation [52, 53]. The Food and Agriculture Organization has presented data indicating that in the industrial countries self-sufficiency ratios for most farm products rose during the period 1955-57 to 1964-66 [77] and that if current policies continue until 1980 self-sufficiency ratios will continue to increase [74, *Papers*, vol. I, p. 70].

Perhaps the most striking event, and certainly the most publicized one, affecting international trade in farm products was the formation of the European Economic Community and the Common Agricultural Policy. Because the Common Agricultural Policy, which was designed to create a uniform agricultural policy within the Common Market and free movement of farm products among the members, was in an early stage of development, negotiations on farm products during the Kennedy Round were extremely difficult and largely fruitless [28, 78, *Papers*, vol. I, part 7].

Major components of the Common Agricultural Policy for a wide range of farm products—grains, flour, beef and veal, pork, poultry, eggs, and dairy products—are the variable levy and export restitutions [52]. The basic elements of the price policy consist of a target price (generally at both farm and market levels), an intervention price which is below the target price and is similar to the United States support prices, and a threshold price. The difference between the import price and the threshold price determines the variable levy—a measure designed to maintain the equivalence between the cost of imported and domestic products and the target price. Under this system a fall in world prices has no effect on the volume of imports. Export restitutions or export subsidies come into play when production exceeds consumption within the Common Market and exports are the alternative to increasing stocks.

The impact of the Common Agricultural Policy on Common Market imports and exports of farm products has been subject to substantial dispute. Studies in the United States Department of Agriculture indicate that there have been substantial restraints on imports as well as significant distortions of the pattern of trade [5]. Perhaps the most striking distortion has been the substitutions in livestock rations due to the varying barriers to imports. Soy-

bean and oil-meal imports have increased rapidly as have the imports of certain starch products (manioc, for example) that enter duty free. The amount of grain included in mixed feeds has declined substantially since the policy was imposed [54].

Coppock [10, 11] contributed two excellent studies of farm and trade policy difficulties that confronted the Atlantic community in the early 1960s. These two books contain a great deal of relevant descriptive material on the structure of agriculture in Western Europe and North America. The statement of problems is still fresh and incisive.

Tracy [72] provides an informative description and analysis of farm and trade policy for the period since 1880. He indicates the circumstances that gradually resulted in a return to agricultural protectionism in the latter part of the nineteenth century and the early part of the twentieth century. For those who may think that the policy problems of agriculture today and our efforts to solve them represent something new, it is sobering to read the relevant parts of an article by Walford [83], especially tables IX and X, the latter dealing with restrictions on the export and import of grain.

Although it is quite appropriate to be critical of many of the agricultural and trade policies of the industrial countries, it must be noted that developing countries have also followed policies that have adverse effects upon their own agriculture. Schuh [59] has presented both an informative catalog of such policies as well as an analysis of a specific Brazilian example. In discussing general economic policies that affect agriculture he notes four such policies that have often been adverse to the interests of farm people and the expansion of agricultural production: (1) forced draft industrialization directed specifically to import substitution; (2) high protective tariffs or other import restrictions designed to reduce imports while failing to provide incentives to expand exports; (3) the overvaluation of exchange rates and the frequent establishment of multiple exchange rates; and (4) credit and fiscal policies to stimulate industries.

Taken together this mix of policies tends to penalize agricultural exports and to result in high prices for modern farm inputs and a loss of export markets for traditional agricultural products. Schuh estimated the effects of an overvalued exchange rate in Brazil upon the exports of corn for 1960-66. He estimated that potential exports of corn would have had an average value of about \$103 million compared to actual exports of approximately \$15 million [70].

Valdés [82] analyzed the effect of Chilean commercial and trade policies for the period from 1946 to 1965. He estimated that throughout most of this period there were significant negative rates of effective protection for wheat and beef, which were normally imported, and for barley, lamb and wool,

which were normally exported. For all the commodities except barley the negative rate of effective protection ranged from -0.16 to -0.67. After 1951 barley generally, though not always, had either a slight positive or zero protection. The primary sources of the negative rates of protection were the overvaluation of the Chilean currency and the tariffs on farm production inputs.¹ Valdés concluded: "The results suggest that if during the 1950's Chile had opted for a commercial policy without negative protection for these farm activities, the trade balance deficit of agricultural goods would have been reduced to an insignificant level." For 1956-60 the trade balance deficit was approximately \$50 million.

Measurement of Trade Policy Effects

Economists have argued repeatedly that the trade interferences accompanying domestic farm programs have a variety of adverse effects — on consumers, on the gains from specialization, on the export earnings of developing countries, and on taxpayers. Although much remains to be done in terms of providing verifiable estimates of these and related effects, considerable progress has been made since 1955. In this review four general areas will be considered: (1) the impact of P.L. 480 upon recipient countries; (2) the production and consumption effects of the enlargement of the Common Market; (3) the effects of farm and trade programs of the industrial countries on the export earnings of the less developed countries; and (4) the measurement of the benefits and costs of farm and trade policies.

P.L. 480 and the Recipient Countries

Schultz [62] presented estimates of the relationship between the money cost to the federal government of P.L. 480 food shipments, the marginal revenue that would have been earned from exporting the same quantity in commercial markets, the cost of P.L. 480 shipments to recipient countries, and the value to recipient countries. He estimated that the value of the shipments to the recipient countries was about 37 percent of the Commodity Credit Corporation costs. Based on the agreements that had been signed, he estimated the cost to the recipient countries at 10 to 15 percent of the CCC costs. He attempted to indicate the effect of P.L. 480 imports upon the farmers of the recipient countries. He felt that the price effect would be negative, though he noted that some of the price effect would be offset by the rise in real income in the recipient countries because of the resource transfer.

Sen [64] gave a rather more optimistic view in connection with the benefits that India had derived from P.L. 480 shipments. He argued that such food

shipments had improved per-capita consumption, that other exporters had not been adversely affected, and that internal price supports had largely if not entirely, eliminated any adverse price effects for Indian farmers. He also argued that the availability of P.L. 480 grain had not slowed down emphasis upon agricultural development.

Witt and Eicher [87] summarized the results of several country studies of the impact of P.L. 480. They gave good marks to the program in providing food in emergencies caused by adverse weather. They concluded that the contribution of P.L. 480 to economic development depended very largely upon the internal policies of the recipient nations. Because of this they found that the case studies available to them did not permit an unequivocal conclusion concerning the adverse effects of shipments on local producers.

Mann [50], basing his work on an extension of an excellent theoretical article by Fisher [22], empirically estimated the impact of P.L. 480 imports on prices and domestic supply of cereals in India. Using a simultaneous equation model that included supply and demand equations for cereals, an income-generation equation, a commercial imports equation, and a stock equation, he found that the shipments lowered the price of cereals and reduced domestic production but that the reduction in domestic production was less than the shipments so that consumption was increased. Mann concluded that under the circumstances prevailing in India the net effect was a desirable one.

Srivastava [68], in a comment on Mann's article, argued that the existence of the fair price shops resulted in a sufficient increase in consumption and that there may have been no adverse effect on cereals prices received by farmers. He also implied that the elasticity of supply of cereals in India was zero. In response Mann [50] argued that there was an absence of evidence to indicate the price impact of the fair price shops.

Rogers, Srivastava, and Heady [56] presented empirical estimates of the effects of P.L. 480 grain imports by India, extending Mann's analysis by an equation that includes the demand for grains in the fair price shops. Their analysis indicates that the fair price shops did result in an increase in net demand for cereals and the effect of imports on domestic production was only a tenth as large as estimated by Mann.

Pinstrup-Andersen and Tweeten [55] estimated the effect of food aid shipments upon the commercial demand for wheat imports. The basic data used were from questionnaires from individuals resident in countries that had received food aid from the United States. Each respondent was asked to indicate how much commercial imports would increase for given reductions in P.L. 480 shipments of wheat. It was estimated that if there had been no food aid shipments of wheat during 1964-66 the world wheat price would have

been increased by 28 percent if the wheat supplied as food aid had been withheld from the market. If the wheat supplied as aid had been exported commercially, the world price of wheat might have fallen by 21 to 41 percent.

The Enlargement of the Common Market

There has been an obvious interest in the consequences of the enlargement of the Common Market by those countries who feel their export trade will be adversely affected and by interests within the new members, especially in Great Britain, and several studies have been undertaken. Some have emphasized the effects on farmers and consumers in the new member countries [8, 41]; others have concentrated on the effects on nonmembers [30, 51].

It should be noted that these studies were preceded by a similar series of studies, sponsored by the United States Department of Agriculture, that analyzed long-term prospects for agricultural supply, demand, and trade for approximately thirty-five countries (see [89, 90] for a list of all studies that have been completed). Most of these studies assumed a continuation of existing policies and prices. But in two studies (for the United Kingdom and Denmark) the effects of joining the Common Market were included. There was keen interest in Great Britain in the effects of Common Market membership on farmers, taxpayers, and consumers [8, 42].

Ferris and others [21] undertook a detailed study of the effect of enlarging the Common Market on United States agricultural trade. This study involved analyses of the supply and demand functions for all of the important farm commodities and projected the effects on imports and exports of the enlarged Common Market by 1980. Projections were also required of changes in production and consumption in the original six countries through 1980, and these were based on revisions of series of projections made earlier [67]. The enlargement was projected to reduce grain imports by more than 3 million tons; this reduction compares to total grain imports of the ten countries in 1968 of 10.9 million tons.² By 1980 it was projected that the enlarged Common Market would import only 1.8 million tons, but much of the reduction in imports reflected the reduction in imports by the original six countries — from exports of 2.9 million tons in 1968 to projected exports of 1.8 million tons in 1980. Projections for milk, beef and veal, and poultry products indicated little change resulting from entry. It was projected that net exports of pork would increase somewhat.

One study [74] was based on the assumption that the Common Market would not be enlarged. A separate paper was prepared to consider the effects of the enlargement on production, demand, and trade in the member countries [76]. One conclusion was that the major impact on trade would be the

result of consumption effects which were projected to be very substantial for feed grains and milk. The decline in demand for feed grains was projected at 3.6 million tons and for milk at 3.9 million tons; the production effect for feed grains was negligible but that for milk was about a quarter of the consumption effect.

Sugar is one of the most highly protected farm products of the industrial countries, and many developing countries have a significant comparative advantage in its production (Bates and Schmitz [3]; D. G. Johnson [34]). Snape [65] undertook an empirical analysis of the effects of the protection of sugar by the industrial economies on the export earnings of the developing countries as of 1959. The effects were divided into consumption and production effects. The consumption effect, estimated by assuming that producer returns in the industrial countries would remain unchanged through the use of a deficiency payment, with consumers being permitted to purchase sugar at international prices, would have been sufficient to increase the sugar exports by more than \$500 million for the world. An estimate of the production effect of protection in the industrial countries for seven countries (not including the Soviet Union) indicated that exports would have been increased by \$675 million. The combined effects would have been nearly \$1.2 billion.³

Although Snape committed one error — he ignored the returns in excess of the world market price obtained by sugar exporters with access to the markets of the United States, the United Kingdom, and France — his analysis was important and, unfortunately, neglected in policy decisions. A later article by Snape [66] included estimates of the excess resource costs, the loss of consumer surplus, and the income transfers in the major protected sugar market markets. Estimates were made for three different levels of world sugar market prices. As in similar analyses he found that the income transfers far exceeded the welfare losses. He also estimated the gains in exports for the major sugar producers that would result from free trade.

Bates [2] and Bates and Schmitz [3] used a spatial equilibrium model to analyze the effects of the United States sugar program on the sources and prices of sugar.⁴ If the United States and the United Kingdom permitted free trade in sugar, United States imports in 1970 would have supplied about 85 percent of domestic consumption instead of less than 50 percent under the sugar program. The results of the model indicated that it made almost no difference to Cuba, to the United States, or to world production and price of sugar whether the United States continued its embargo on Cuban sugar.

D. G. Johnson [34] estimated that the income benefits to American producers of sugar resulting from the sugar program were, at most, \$101 million annually. These benefits were derived from total costs to consumers and tax-

ayers of five to seven times that amount by 1972. He estimated that if the sugar program was abolished the long-run effect would be approximately to double United States sugar imports.

Industrial Country Policies and Agricultural Trade

In spite of the concern expressed in the less developed countries about the effect of the industrial countries' farm and trade policies upon the exports of the less developed countries and the continuing emphasis given to the subject by the Food and Agriculture Organization, only limited effort has been given to estimating the empirical magnitudes involved. Johnson [36] has estimated that the loss in the export earnings of the less developed countries may amount to \$2 billion annually.

A major study was undertaken in the Department of Agriculture, and the summary results were published in *World Demand Prospects for Agricultural Exports of Less Developed Countries*. Several important publications presented the background information in greater detail [57]. Unfortunately, the changes in policies of the industrial countries that were projected from the underlying model of world production, consumption, and trade were quite modest. The major change that was considered was a more moderate pricing system for grains in the industrial importing countries. Even this rather modest change indicated a substantial increase in export earnings from grains for the less developed countries.

As part of its most recent projection exercise the Food and Agriculture Organization made estimates of the effect of the removal of protection in all countries on the exports and imports of developing countries in 1980 [75]. Compared with the level of projected exports and imports in 1980 if current policies of all countries were maintained until that date, the exports of developing countries to the rest of the world might increase by almost \$6 billion and imports by \$2 billion for an increase in net export earnings of approximately \$4 billion. The projections were based on a world model of supply and demand and represented a major extension and improvement on previous work. Credit for the development of the basic model used in the projections is given to H. Alm, J. Duloy, and O. Gulbrandsen of the Institutionen för Ekonomi och Statistik at Uppsala, Sweden.

Benefits and Costs of Trade Policies

Given the very large financial costs imposed by the farm and trade policies of the industrial countries, it is surprising how few efforts have been made to estimate those costs. And even fewer attempts have been made to estimate aggregate benefits, their distribution, and the distribution of costs by income of group.

Most studies of the costs of trade restrictions emphasize the loss in national output through resource allocation effects. These losses are usually referred to as welfare losses and include the loss of consumer surplus and excess production costs. And generally such losses, as estimated, are very minor fractions of the value of national output. Thus, so it seems, trade restrictions do not matter very much. In what can be described as a tour de force Stephen Magee estimated the short-run and long-run welfare costs of United States restrictions on our exports to the rest of the world. He estimated that the combined effect of import and export restraints averages annually about \$7.5 billion in the short run and \$10.5 billion in the long run [49]. Approximately half of the total welfare losses in both the short run and long run were due to restrictions on United States agricultural exports.⁵ But he equated the welfare cost with the actual increase in agricultural exports if there were free trade, and this is surely in error since additional resources would be required in agriculture to produce the added exports. But the important point, for present purposes, is that the welfare loss as estimated amounted to approximately 1 percent of the gross national product for the base year, 1971. This estimate is consistent with others made by Harry G. Johnson for Great Britain [39] and Arnold C. Harberger for Chile [25].

It is argued, and quite correctly, that such static estimates of welfare losses underestimate the total effects of trade restrictions [49, pp. 647-49]. Free trade could make additional gains through dynamic effects, economies of scale, reduction of monopoly, and the elimination of the waste of resources used in first seeking protection and then competing away most of the potential rents. But even if these desirable effects of free trade are substantial, the income transfers that result from trade interferences are many times as great as the welfare losses. It is rather surprising that most economists tend to emphasize the resource costs of protection but discuss the income transfers only in passing, if at all.

Estimates of costs to taxpayers and consumers of trade and farm policies have been made, based on the difference between domestic and import or export prices plus direct governmental costs. Schultze [63] and D. G. Johnson [36] made estimates for the United States that indicated costs on the order of \$9 to \$10 billion. Two similar estimates have been made for the Common Market, one by a group under the auspices of the Atlantic Institute [1] and the other by Kruer and Berntson of the Department of Agriculture [46]. The estimates ranged from \$12 billion to \$14 billion. The various estimates were for the late 1960s. Each of the estimates represents an overestimate of the actual costs borne by consumers, since if either the United States or the Common Market adopted free trade some international prices would increase and it is unlikely that any would decrease.

Josling [41] prepared a useful analytical framework for a more accurate indication of the various costs of farm and trade measures. He noted, correctly, that most efforts to measure costs are quite partial measures, sometimes emphasizing only balance of payment effects, and do not separate income transfers from real or welfare costs — the excess production costs and the loss of consumer surplus. As he indicated, based on reasonable estimates of parameters for Great Britain, most of the costs to consumers and taxpayers that result from farm and trade policies represent income transfers and not real costs or welfare losses.⁶ D. G. Johnson [36, chapter 11] argued that the transfer costs are nonetheless important since some groups in the society are being taxed, either directly or through higher food prices, to give additional income to other groups and that the consequences of the transfers should be judged in terms of the social usefulness of the results.

Josling and others made estimates of the distribution of the costs and benefits of farm policy in Great Britain and compared these measures for four important policy options: no support, the United Kingdom deficiency payment scheme, a variable levy scheme that would give farmers the same return as the deficiency payment system and joining the European Economic Community and adopting the Common Agricultural Policy [42]. The results showed that with either the deficiency payment scheme or the variable levy scheme most income benefits went to the highest income quartile of farmers; the lowest income quartile of farmers received almost no gain from any of the three policies. An equally important result was the distribution of the costs of the various farm policies among households. Under the policy in 1969 the lowest income quartile of households paid a smaller fraction of the costs than their incomes (after transfers) represented of total household income, and the highest income quartile paid a substantially higher fraction of costs than their incomes represented of the total. The two middle quartiles paid the same fraction of costs as their incomes represented of the total. But the variable levy policy, either with United Kingdom or European Economic Community prices, resulted in a shift in the distribution of costs away from the highest income quartile to the other three quartiles, including the lowest income quartile [42].

The measurement of the degree of protection is closely related to the measurement of the costs of protection. An important development in this area has been the concept of effective protection. The traditional measure of protection has been that of nominal protection — a measure of the difference between internal and external (import or export) prices. However, the concept of nominal protection is not an accurate measure of the amount of protection provided a production activity because of the varying importance of purchased inputs used in the production process. The degree of effective protec-

tion is defined as the ratio of the difference between the value added at domestic prices and the value added at world prices to the value added at world prices [24]. Very modest levels of nominal protection can result in effective protection of 100 percent or more if a major input is imported free of duty and the first processing, which results in little value added, is protected by a duty as low as 10 percent on the products of that processing. The structure of tariff rates in many industrial countries that provide for zero tariffs on raw materials and seemingly low tariff rates on processed products effectively bar developing countries from many processing activities.

Few estimates have been made of the rates of effective protection for farm products. Wipf [86] has published estimates for United States agriculture for 1958, 1963, and 1968. He found rates of effective protection ranging from negative for poultry and eggs to 144 percent for food grains and 662 percent for sugar.

Dardis and Learn [12] estimated the degree of protection for major agricultural products for several countries in 1959-61. Their measure of the degree of protection was equivalent to the concept of nominal protection. The study was designed to reflect the effect of nontariff as well as tariff barriers, though direct income payments or input studies were ignored. The study, unfortunately, was flawed by numerous errors. For example, protection was measured by the difference between the average producer price and the average export price for wheat in the United States. This calculation omitted the domestic transport and marketing costs. As a result of this error the degree of protection for United States wheat in 1959-61 was found to be only 2 percent, even though export subsidies of approximately 60 cents per bushel (\$2.20 per quintal or 35 percent of the export price) were paid during the three years. The degree of protection for wheat in Canada was indicated as a negative 27 percent, apparently because of failure to include transportation and marketing costs within Canada or neglect of all the delayed payments to producers.

Dardis and Learn included discussion and estimates of the welfare cost of protection. This part of their study deserves serious study. It is too bad that the empirical results were marred by inaccuracies in the estimates of the degree of protection.

Josling and Earley [43] provided an informative discussion of various measures of protection and made estimates of each of the measures for five products (wheat, barley, maize, sugar, and milk) for Canada, the United States, the United Kingdom, Germany, and France in 1968-70. An effort was made to include the effects of all important subsidies and trade restrictions. The measures of effective protection seem of little use since no independent estimate of value added was made for each commodity and country; instead, val-

ue added was assumed to be a fixed percentage of the value of output with the same percentage being applied across commodities within each country [43]. And, without explanation, the authors added: "Effective protection is not an adequate measure of resource allocation among countries for the same product." It is not clear whether the statement is meant as a generalization or is a reference solely to the calculations actually made.

The unique feature of Josling and Earley's paper is the estimation of the trade volume effects of the trade restrictions [43, pp. 55-60]. Space permits a summary of the results for wheat only. Free trade was estimated to result in a decrease of wheat exports of 0.6 million tons by Canada, 1.7 million tons by France, and 3.2 million tons by the United States. Import increases would have been 0.3 million tons for the United Kingdom and 1.72 million tons for Germany. These results, unfortunately, do not seem to take into account quality differences for wheat and thus the degree of protection provided in Germany and France is significantly underestimated.

New Directions for Research

There are many areas of research that impinge to some degree upon international trade in farm products. In fact, all research that deals with the production and consumption effects of domestic farm policies have an implication for trade. But there are four major areas of research that merit serious attention and have the potential for both a considerable impact upon policies and a contribution to our understanding of economic phenomena: (1) empirical estimates of the impact of trade restrictions upon production, consumption, and trade in farm products; (2) analysis of the adjustment problems of farm people that would result from substantial reductions in protection; (3) effects of trade restrictions upon price instability; and (4) appropriate methods of trading with centrally planned economies.

Estimates of Trade Restriction Effects

As we noted earlier, Dardis and Learn [12] and Josling and Earley [43] attempted to estimate the trade and price effects of the removal of trade barriers. These were important first steps, but much more work is required before our results can be said to be more than illustrative. In neither study was it possible to derive the best possible estimates of the relevant demand and supply functions.

A promising further effort was made in *A World Price Equilibrium Model* [75]. This was an enormously ambitious project in which supply and demand functions were estimated for all the major groups of farm products in the main agricultural areas of the world. The system was then solved for different

assumptions concerning the degree of protection, including the case of free trade.

Though there has been a renewed interest in recent years in estimating supply and demand functions for farm products in the major areas of the world, much further work is required to provide a firmer basis for projections of the effects of trade restrictions and interferences upon production, consumption, trade, and the returns to resources.

Adjustment Problems of Farm People

The second area of research is one which we have largely ignored, even though we have the tools to permit us to inform farm people of the adjustments that would be required if there were a substantial reduction in the degree of protection for agriculture. Much of the resistance to freer or more liberal trade is the result of fear of the dislocation and possible loss of employment and income that might occur if barriers to trade were reduced or eliminated. Dairy and sugar farmers in the United States strongly resist any measure that would result in increased imports. Similarly farmers and farm organizations in Western Europe fear the impact of lowering grain prices.⁷ Yet it is not self-evident that employment opportunities in agriculture in the Common Market would be reduced if grain prices were lowered. The present structure of protection provides high rates of protection for labor extensive products — the grains — and relatively little protection for the labor intensive products — livestock and milk — and at the same time prices. What is needed is research that will indicate the alternative resource use patterns that would emerge with freer trade and what implications these patterns would have for farm employment and income, especially the return to labor. Until such research is undertaken, it is highly probable that the efforts to reduce trade barriers will be strongly and probably successfully resisted.

A related area of research that needs emphasis is that of adjustment assistance. Although the majority of farm people might gain from freer trade, it is almost certain that some farm people would lose. We need to know how such groups can be identified and what kinds of assistance will best meet their needs and at the same time permit the resource adjustments to occur. All too often the impact of agricultural adjustment programs has been to maintain the status quo and not to respond to changing conditions. This may be one reason why emergency farm programs last several decades.

Trade Interferences and Price Instability

One of the important arguments for price policies such as the Common Agricultural Policy or the price support policies of the United States, Canada, and Australia is the desirability of achieving greater price stability than would

prevail in the absence of these policies. What is ignored in this position is that the effect of such price support policies, including the associated interferences with trade, may greatly increase price instability in the international markets for the affected products. The price behavior of internationally traded farm products since late 1972 may have been due largely to trade interferences and not primarily to shortfalls in production or increased demand. I have argued that for the grains the production shortfalls that occurred in 1972 and 1974 were not large enough to explain the doubling and trebling of the prices of grains and soybeans, nor was the cyclical increase in demand that occurred in the major industrial countries from 1971 through 1973 sufficient, either alone or in combination with the production shortfalls, to explain more than a small fraction of the price increases [37, chapter 3]. Hathaway, on the other hand, has argued that increased demand plus the production shortfalls were largely responsible [27], and this seems to be the prevailing view.

I believe that the large price increases in the international markets occurred primarily because most consumers and producers were prevented from reacting to the price changes that resulted from governmental policies designed to stabilize domestic prices. Thus all of the adjustment to the production shortfalls and demand increases was imposed upon a rather limited segment of the world's market for feeds and grains.

The effect of trade interferences upon price instability could be determined if the research were undertaken. It may well be that the researcher would have available almost the equivalent of a laboratory experiment in the price increases from 1972 through 1974 and the price decreases in 1975 and later years. The behavior of sugar prices from early 1974 through early 1975 in the international markets and the relationships between the prices in the international markets and domestic price policies affecting both consumers and producers would be a highly suitable subject for investigation. In December 1974, when retail prices of sugar were 60 cents per pound or more in Canada and the United States, in several Western European nations retail prices were approximately 20 cents per pound, and in Brazil and Mexico retail prices were less than 10 cents per pound. In several major sugar producing and exporting countries producer prices had increased little if at all. It would appear that all of the demand and supply adjustments were forced upon a restricted part of the World market.⁸

Trade with the Centrally Planned Economies

If the Soviet Union has assumed a major role as an importer of grains and feedstuffs — and Schoonover [15] has made a convincing case for this possibility — it becomes necessary to consider the implications for world markets.

Mackie [48] estimated that 93 percent of the year-to-year changes in world imports of wheat from 1963 through 1974 occurred as a result of imports by the centrally planned economies of the Soviet Union, China, and Eastern Europe, and 80 percent of the fluctuation resulted from imports by the Soviet Union alone. Mackie also found that 92 percent of the year-to-year changes in world exports of wheat were absorbed by the United States and Canada, with the United States accounting for 83 percent of the total variation.

Grain production in the Soviet Union displays substantial year-to-year variability. In addition, the Soviet Union maintains a significant monopoly of information, with respect to the size of its expected production, the magnitude of its reserves, and its intentions. Are there measures that the major exporting countries could take that would make it easier to cope with imports by the Soviet Union and other centrally planned economies? Should the major exporters hold stocks to minimize the instability imposed upon their own economies and the economies of the other major importers? If such stocks were held, would it be possible to adopt trading arrangements that would permit recapturing the costs of holding the stocks from the centrally planned economies? If answers to these and similar questions cannot be found, there may be further fragmentation of the markets for grains and feed materials.

Notes

1. As Schuh [60] pointed out, developing countries are not alone in having overvalued rates. He showed that the dollar was significantly overvalued during the 1960s and that this affected agricultural policy (direct income transfers and export subsidies) and imposed significant and perhaps unnecessary adjustment problems upon American agriculture.

2. At the time the projections of the Common Market enlargement were made, it was assumed that Norway would become a member. This did not occur, but the projections were affected hardly at all since Norwegian farm prices were similar to the Common Market farm prices.

3. I have used the very helpful summary of Snape's results published by H. G. Johnson in his valuable study of United States economic policy toward the less developed countries [40, Appendix to chapter 3].

4. A good discussion of spatial equilibrium models may be found in Bawden [4]. A further application of spatial equilibrium models to the world wheat economy may be found in Schmitz and Bawden [58]. Both sources include useful bibliographies.

5. Unfortunately Magee's estimate of the effect of trade restrictions upon United States agricultural exports rested, at least in part, upon a possibly shaky estimate made by D. G. Johnson [33].

6. Josling compared the various elements of cost for different farm and trade policies — free trade, the actual policy of the United Kingdom in about 1970, the introduction of variable levies but with the current level of price supports and the entry of the United Kingdom into the Common Market — with the Common Market prices. Compared with free trade British entry into the Common Market was projected to transfer £ 560 million

to farmers. The welfare costs of entry would have been £ 34 million, of which the reduction in consumer surplus amounted to £ 13 million and excess production costs accounted for the remainder. Of the gross income transfers to farmers it was estimated that the cost of additional resources to produce the expanded output would have been £ 174 million, leaving an increase in net producer returns of £ 386 million [41].

7. For evidence on this point see D. G. Johnson and Schnittker [38], especially chapters 4, 8, and 9].

8. For a discussion of the limited nature of the international market for sugar, see Bates [2], Bates and Schmitz [3], Snape [65], and D. G. Johnson [34]. These studies were completed before the events described in the text occurred.

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