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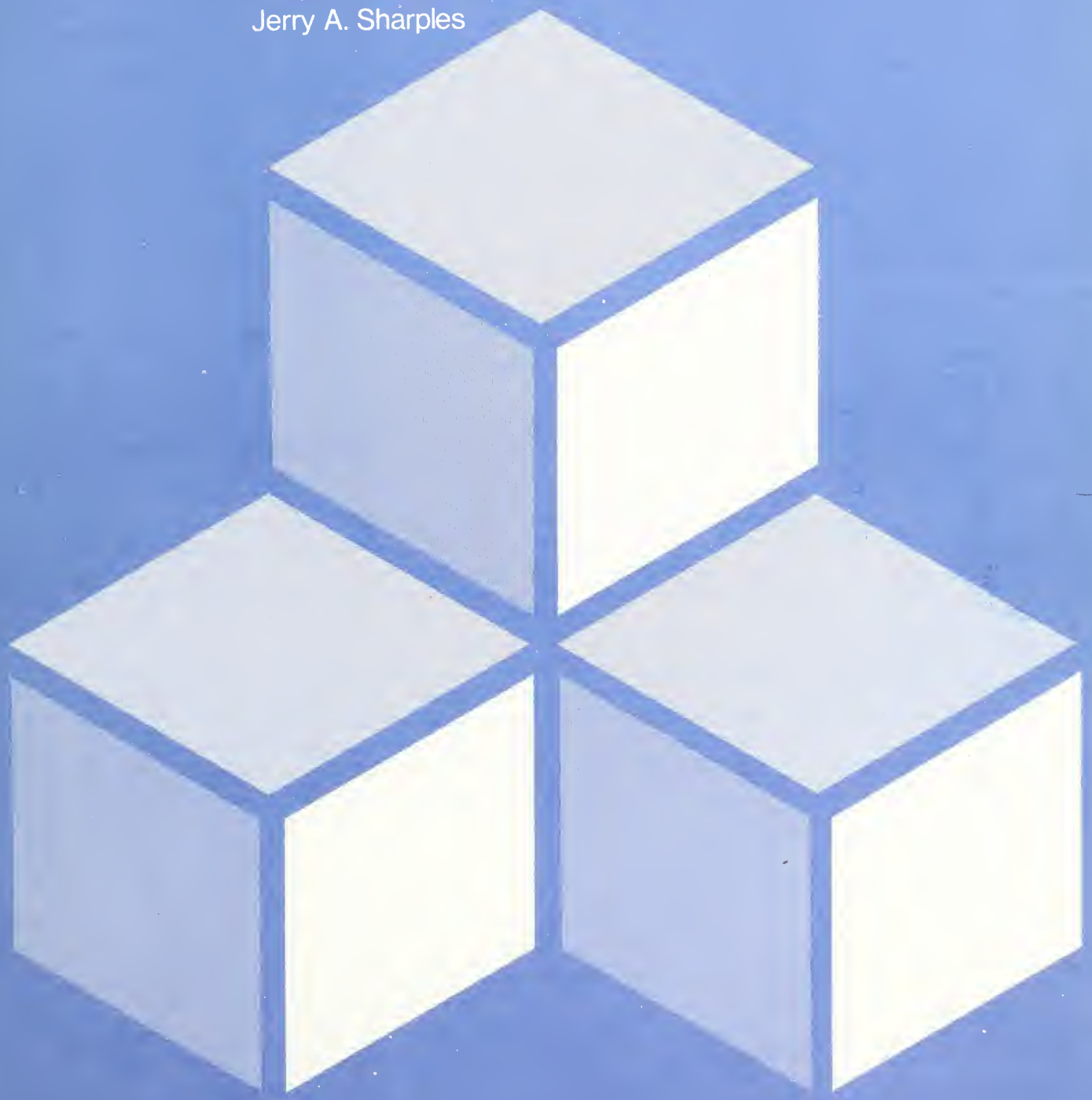
Japanese and European Community Agricultural Trade Policies:

Some U.S. Strategies

Philip L. Paarlberg
Jerry A. Sharples



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Abstract

Japanese and European Community (EC) wheat and coarse grains policies have increased the cost of U.S. farm programs and cut U.S. farm income. The agricultural sector in the United States would benefit from selective EC and Japanese agricultural trade liberalization. This study looks at the alternatives open to the United States, Japan, and the EC, and determines which alternatives would benefit the agricultural sectors of all three parties.

Key words: European Community, Japan, Common Agricultural Policy, trade, trade liberalization, export subsidies

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Summary

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One EC alternative which achieves results desired by both the EC and the United States is a two-price policy combined with a domestic production quota. Under a two-price policy, exports of EC production in excess of domestic needs would be priced at world market levels (which is good for U.S. farm income), thus providing revenue to support EC farm prices through internal EC income transfers.

Other alternatives would not work as effectively. One alternative, reducing U.S. grain exports (and thus U.S. production), would initially increase world prices and U.S. export earnings, but expanded production by other countries would partially offset the U.S. action. After the rest of the world adjusts, U.S. export earnings would decline, and the EC would see savings on export subsidies to wheat.

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Philip L. Paarlberg and Jerry A. Sharples*

Introduction

Agricultural policies in the European Community (EC)—Belgium, Denmark, France, Greece, Ireland, Italy, Luxembourg, the Netherlands, United Kingdom, West Germany—and Japan are extremely protectionist. These nations rely on support prices well above world market prices to maintain farm incomes. The price of wheat at Rotterdam (c.i.f.) [1] in 1980 was about $215 per metric ton, while wheat entering the EC was $300 per ton. Coarse grain imports are similarly protected.

To maintain high internal prices, the EC uses a variable levy system for major commodities, while Japan uses state trading and licensing. High officially determined prices in these nations have dampened consumption, increased production, reduced imports, increased stocks, and for several commodities have resulted in subsidized exports. From the U.S. perspective, these policies have reduced world market prices and increased the cost of U.S. farm programs. Because U.S. farm income declined sharply during the early 1980's, the competition of subsidized exports and the denial of free access to EC and Japanese consumers have become serious to U.S. agricultural policymakers and other groups concerned with U.S. farm income. U.S. agriculture increasingly seems to seek retaliation against EC and Japanese policy unless those nations adopt a freer trade policy.

This paper reviews the origin and operation of the EC's Common Agricultural Policy (CAP) and Japanese agricultural policy, and analyzes the U.S. costs of these policies in several key commodities. This analysis suggests that although the United States has suffered in aggregate from these policies, the losses and gains have been distributed unevenly. The United States could benefit more by selective trade liberalization than by a reduction of barriers in all commodities. Several U.S. policy options countering the effects of these policies are analyzed using the wheat market as an example. For wheat, the most commonly advanced alternative—export subsidies—may not be an effective retaliatory weapon for the United States. There are U.S. policy options, however, which would be effective in removing distortions in world trade due to EC and Japanese policy, but which will also meet the objectives of EC and Japanese policymakers.

EC-Japanese Agricultural Policies

Although the purpose of EC and Japanese agricultural policies are similar, the policies differ in their execution.

EC

The objectives of the EC's CAP as established in the Treaty of Rome in 1957 are to: (1) increase farm productivity, (2) ensure a fair living standard for farmers,

*Agricultural economists, International Economics Division, Economic Research Service (ERS), U.S. Department of Agricultural Economics, Purdue University. The authors thank William Coyle, Donna Vogt, Vernon Roningen, Paul Dymock, Jim Longmire, Reed Friend, and the staff of the Western Europe Branch, ERS, for ideas and comments. Bob Jones and Philip Abbott at Purdue University also contributed useful comments.

[1] Cost, insurance, and freight.

(3) stabilize agricultural markets, and (4) guarantee stable food supplies at reasonable prices to consumers.

The CAP is based on the target price, the wholesale price level desired by EC policymakers in the most deficit consuming region. Slightly below the target price is the basic intervention price, the point at which the intervention agency stands ready to purchase domestic grain. Thus, the intervention price is similar to the U.S. loan rate. To prevent imports from undercutting its price support operations, the EC establishes a minimum import price—the threshold price.[2] Since the threshold price is fixed while world prices vary from day to day, the difference (the levy) also varies daily. With some modifications, this policy structure is common to all commodities under the CAP's jurisdiction.

Japan

Pricing and marketing of wheat and rice are controlled by the Japanese Food Agency under 1942 legislation *(1, 3)*.[3] The agency sets domestic rice and wheat prices as part of a two-price system, with high producer prices and lower consumer prices. Both prices are above world market levels and financed by agency expenditures. To maintain these high wheat prices, the agency controls wheat imports through a quota arrangement with licensed importers. The high rice prices have encouraged production, dampened consumption, increased stocks, and resulted in subsidized export sales *(1, 3)*.

Japan primarily uses quotas, licensing, and health standards to control meat imports. All red meat imports are subject to licensing (2). Meats of bovine animals are narrowly restricted, while other meats are less tightly controlled. Japanese health regulations are similar to those for other importing nations, but are used as general trade restrictions.

Commodities for use in livestock feed rations are imported without duty. These include soybeans, soybean meal, corn, and sorghum.

[2] The U.S. Government has authority to operate similar restrictions on imports under Section 22 of the Agricultural Adjustment Act of 1935.

[3] *Italicized* numbers in parentheses refer to items in the references.

Imports of U.S. Agricultural Products

Of total U.S agricultural exports, the EC accounts for about 20 percent, while Japan buys about 15 percent (table 1). Both are large buyers of coarse grains, but are not so important in U.S. wheat trade. Japan is more important than the EC in the U.S. corn market, and purchases between one-third and one-half of all U.S. sorghum exports. Both countries purchase a significant amount of soybeans and soybean meal, with the EC dominating. The EC also dominates the U.S. export market for corn gluten, grain byproducts, dried brewers grains, and citrus pulp, with between 90 and 99 percent of the U.S. export market. Japan is a large buyer of beet pulp. Japan imports more U.S. meat by a considerable margin, accounting for 60 percent of U.S. exports of beef, 40 percent of U.S. pork exports, and 13 percent of U.S. poultry exports.

U.S. Costs of CAP and Japanese Policies

Estimates of the costs to the United States of the CAP and Japanese agricultural policies are based on limited information. ERS has recently published two studies

Table 1—Volume shares of selected U.S. exports purchased by the EC and Japan

Commodity	EC		Japan	
	1980	1981	1980	1981
	Percent			
Wheat	6.0	4.2	8.7	7.8
Coarse grains	14.9	13.7	21.4	22.4
Corn	17.1	15.5	18.2	21.1
Sorghum	.8	.9	48.5	35.4
Soybeans	44.8	43.1	16.3	19.3
Soybean meal	53.4	49.0	2.9	2.5
Corn gluten	99.4	99.0	—	—
Grain byproducts	96.1	93.0	—	—
Pulp, beet	10.8	25.6	87.8	72.3
Pulp, citrus	—	99.1	—	—
Dried brewers grain	90.0	88.1	—	—
Beef	1.3	2.2	60.9	60.0
Pork	5.9	2.2	37.4	49.2
Poultry	6.8	4.4	11.7	16.0
Percentage of all U.S. agricultural exports (value share)	23.4	20.0	14.2	15.3

— = insignificant.
Source: *(9)*.

Table 2—Estimated annual trade diversion impacts of EC grains policies, 1980/81 base

Commodity	Price change[1]	Change in volume		Change in value[2]	
		Imported	Exported	Imported	Exported
	Dol./metric ton	*---Mil.metric tons---*		*---Billion dollars---*	
European Community:					
Wheat	-55	—	6.2	—	[3] 1.2
Coarse grains	-58	14.5	—	[4]2.5	—
Corn gluten	-19	-.3	—	-.1	—
Grain byproducts	-36	-.3	—	-.1	—
Soybeans and meal	-6	-.5	—	-.2	—
Pulp	-12	-.1	—	—	—
Manioc	-28	-.9	—	-.3	—
United States:					
Wheat	15	—	1.4	—	1.0
Coarse grains	6	—	5.5	—	1.4
Corn gluten	-19	—	-.3	—	-.1
Grain byproducts	-36	—	-.1	—	—
Soybeans and meal	-6	—	-.3	—	-.2
Pulp	-12	—	-.1	—	—
Other exporters:					
Wheat	15	—	.8	—	.7
Coarse grains	6	—	1.5	—	.4
Grain byproducts	-36	—	-.2	—	-.1
Soybeans and meal	-6	—	-.1	—	-.1
Manioc	-28	—	-.9	—	-.3
Other importers:					
Wheat	15	-4.0	—	.5	—
Coarse grains	6	-7.5	—	-.7	—
Soybeans and meal	-6	.1	—	-.1	—

— insignificant.
[1]Border prices except wheat and coarse grains prices in the EC are internal prices.
[2]Evaluated at border prices.
[3]This is $1.8 billion when evaluated at internal price.
[4]This is $2.2 billion when evaluated at internal price.
Source: Based upon elasticity estimates provided by *(5)*, and the model discussed in appendix A

documenting the origins of current U.S.-EC trade disputes. The study by Harold McNitt reviews the changing market shares of U.S. agricultural products in the EC markets, and considers future developments as other European nations join the EC *(6)*. The study by Timothy Josling and Scott Pearson examines the consequences of the CAP and directions which it may take in response to budgetary and enlargement pressures *(4)*.

The CAP

First, consider how the CAP affects EC feed rations. Suppose the EC maintained its livestock numbers but let feed ingredients be freely imported and did not protect domestic grain prices. The estimated changes are the result of full world market adjustments to the hypothetical change in EC policy (table 2).

In the wheat market, the EC's free trade policy raises world market prices about 8 percent and lowers EC domestic price levels.[4] As a result, EC wheat production is reduced 8 percent and consumption expanded 4 percent. Net exports of wheat (exports minus im-

[4] These wheat figures also include the impact of freely traded wheat on Japan. Virtually all the world wheat market impact, however, may be attributed to the EC

ports) by the EC are reduced from 9 million to 2.8 million tons. With the decline in EC wheat exports, the United States and other exporting countries sell an additional 1.4 million and 0.8 million tons, respectively. Because world market prices rise, other importing nations reduce purchases by 4.0 million tons. In terms of trade value, EC export earnings on wheat fall $1.2 billion, while export earnings for the United States and other exporters rise by $1 billion and $700 million, respectively. Finally, the cost of imports to other nations rises slightly: $500 million (see app. A for a description of the wheat model used for this analysis).

The EC's adoption of free trade would affect coarse grains prices in a manner similar to that for wheat. However, the EC is a net importer of coarse grains. EC prices fall about 25 percent and consumption and imports expand. As a result, world coarse grain prices rise about 4 percent. Net EC imports rise from 5.8 million tons to 20.5 million, and cost an additional $2.5 billion. U.S. coarse grain exports rise 5.5 million tons, yielding a $1.4-billion gain in export revenue. Other exporting nations expand shipments by 1.5 million tons for an additional $400 million in export revenue. A reduction in imports by other importing countries caused by the increase in world market prices offsets more than half the increase in EC coarse imports.

The reduction in EC internal prices for wheat and coarse grains affect use and prices of several other commodities used to make livestock feeds. The United States supplies most of these commodities. The net effect on all these nongrain commodities is to lower imports and prices. Grain byproducts show the largest price decrease, $35.50 per ton. EC imports fall by 300,000 tons, 100,000 tons of which originate in the United States. Soybeans and meal decline in price the least, $6.20 per ton. This occurs because soybean meal in combination with manioc substitutes for grain in the EC. Adoption of the free trade policy on wheat and coarse grains reduces manioc use by 900,000 tons, and manioc prices by $28 per ton. Although the decline in manioc use does not directly affect U.S. trade, soybean meal is a complement to manioc in livestock feed, and EC imports of soybeans and meal fall by 500,000 tons. U.S. exports of soybeans and meal fall by 300,000 tons, while exports from other countries fall 100,000 tons. The decline in price encourages imports of 100,000 tons of soybeans and meal by other countries. Because of the EC policy change, U.S. trade volume in corn gluten feed and citrus pulp also falls by 300,000 and 100,000 tons, respectively.

The effects of the shift in EC trade policy on total import costs and aggregate export earnings can be determined from table 2. EC net import costs are $3 billion higher because the increased cost of imported coarse grains and the loss of export earnings on wheat more than offset the cost-savings on other feedstuffs. The United States earns an additional $2 billion in exports because gains in wheat and coarse grains trade are greater than the losses in grain byproducts, corn gluten feed, soybeans and meal, and citrus pulp trade. Similarly, other exporting countries' export earnings improve by $600 million. The United States does relatively better than other exporting countries under the hypothetical liberalization of EC trade policy since it gains roughly three times the benefits in the coarse grains market—and coarse grains are the major beneficiary under the new EC policy. Other importing countries reduce import costs for wheat, coarse grains, and soybeans and meal by $300 million.

These results do not include adjustments in livestock and livestock products trade. A recent Australian study by Tyers and Chisholm includes the effects of liberalized trade in both livestock and grains *(8)*.The changes in grain trade tonnages are similar to those reported in this analysis. The Australian study further suggests that EC exports of nonruminant meats decline about 1.5 million tons, while U.S. exports increase more than 2 million tons. On the beef market, trade liberalization would mean an increase in net exports by the EC, thus implying that gains from lower feed costs more than compensate for the decline in EC beef prices.[5]

Japanese Policy

Liberalizing Japanese rice policy would contract production and stocks and expand consumption. The United States could benefit in several ways. First, the Japanese would no longer need to subsidize rice exports. Subsidized rice sales reduced U.S. export revenues in 1980 by an estimated $20 million *(1)*. Second, the Japanese rice policy has reduced import de-

[5] These results do not include a liberalized dairy sector.

mand for U.S wheat by an estimated $30 million in 1980 *(1)*. Liberalization could thus mean increased demand for U.S. wheat. Finally, it is possible that under free trade Japan would import rice from the United States.

Using 1980 trade as a base, analysis suggests Japanese imports of beef/veal, pork, and poultry under liberalized trade policies would have been 375,000, 150,000 and 264,000 tons higher in 1980, respectively. Under the liberalized meat import policy, 1980 U.S. meat exports would have been 68,000, 43,000, and 126,000 tons greater for beef/veal, pork, and poultry, respectively. The Tyers and Chisholm study, however, notes an undesirable (from the U.S. perspective) side effect *(8)*. Japan's net imports of coarse grains decline by roughly 60 percent, or by 10.8 million tons using 1980/81 to 1981/82 average imports, as the Japanese livestock sector contracts. As with the EC, the United States absorbs most of the decline in Japanese imports. Some of the loss in grain trade is offset by increased feeding in the United States; however, Australian grass-fed beef meets much of the decline in Japanese beef feeding. The Tyers and Chisholm study suggests net U.S. welfare is lower. Although not analyzed in the Australian study, soybean trade could suffer a fate similar to that for coarse grains, a loss of about 2 million tons. Thus, if Japan were to liberalize its meat import policy, the United States could lose exports of about 10 million tons (1980/81 levels) of coarse grains and soybeans to that market.

U.S. Implications

This analysis suggests that the United States overall loses about $2 billion from the protectionist grain policies of the EC and Japan. In general, these policies tend to depress world agricultural price levels, benefiting U.S. consumers and hurting U.S. producers. The Tyers and Chisholm study shows the United States coming out about even if the EC and Japan (as well as the United States) became free traders of livestock, feeds, and grain *(8)*.

These results also suggest that the protectionist policies have a significant impact on distribution of U.S. farm income. Protectionist policies hurt U.S. wheat producers, for example, but benefit U.S. soybean producers. It is not clear whether these policies taken together actually hurt coarse grain producers. The CAP depresses U.S. coarse grain prices, but this is at least partially offset by extra coarse grain demand stimulated by the protected Japanese livestock sector. Liberalization of policies might expand U.S. pork and poultry markets. The U.S. beef markets might not expand because of increased competition from the EC and Australia. Tobacco, sugar, dairy (a major component of the EC's agricultural sector), and other minor commodities were not examined.

Although the United States overall would gain from liberalization of EC and Japanese policies, certain sectors of U.S. agriculture would gain much from selective changes in those policies. Export subsidies are a prime example. U.S. wheat producers would gain if the EC eliminated subsidized wheat exports. The same would be true for poultry and other product markets.

Alternative U.S. Responses

Agricultural trade problems between the United States and the EC and Japan fall into two categories: the traditional problems of access to agricultural markets, and the more recent problems of subsidized exports. The above analysis suggests that the latter is more costly to U.S. farmers and the U.S. balance of payments. How might the United States respond to these trade problems?

To counter the limited access of U.S. commodities into EC and Japanese markets, the United States could restrict production and exports of those commodities. Further, the United States could participate in a multilateral agreement among the major commodity exporters (excluding the EC) to restrict production and exports. To counter export subsidies, the United States could wage a "subsidy war" by placing subsidies on U.S. exports. The United States could also encourage Japan and the EC to change their subsidy policies, which could be mutually beneficial to them and the United States.[6]

[6] Another U.S. alternative is to do nothing. This would force the U.S. agricultural sector to continue to adjust to world trade conditions. This was the U.S. position during the seventies when the United States faced about the same EC and Japanese policies as it does now. The difference between then and now is that in the seventies world trade was rapidly expanding.

The above discussion relating to wheat suggests that there is potential for substantial increases in U.S. farm income and export earnings if the EC (and Japan for rice) removed export subsidies on agricultural commodities. Two questions logically follow: Does the EC have any alternatives to the export subsidy which would still allow for achieving basic agricultural policy objectives? We believe the answer is yes. Could the United States pressure the EC and Japan to adopt changes to reduce or eliminate export subsidies by applying subsidies in the same export markets? We believe the answer is yes, but at a high cost.

Ways To Eliminate EC Export Subsidies

EC agricultural policies can be restructured to remove the export subsidy but still maintain incomes of EC producers. The United States wants the former while the EC wants both. Thus, a common ground for negotiation exists. To maintain farm income, however, the CAP for grains would need changes so that the desired level of income of EC grain farmers is obtained only from the domestic market rather than partly from subsidized export sales. The wheat market is used to illustrate one way this might be done.

EC wheat producers currently grow wheat in excess of domestic needs. The EC puts the surplus on world markets and subsidizes prices to offset the difference between the domestic price support and the world price. Thus, the EC grains policy supports its wheat growers through an above-world price paid on domestic wheat use, and through a subsidy on exported wheat.

One alternative EC strategy is to divide its wheat market into two parts: domestic and export. Wheat produced for domestic consumption would receive a price well above the world price, but wheat produced in excess of domestic needs would be exported without subsidy. To manage the program, the EC would allocate production quotas (to fill domestic needs) among all EC wheat producers. This program should reduce EC wheat production since farm sales in excess of quota would be marketed at a much lower price.

The income generated on wheat produced for the domestic market could be obtained entirely with a domestic wheat price set much higher than world market prices. Alternatively, the price to consumers could be lower but supplemented by a deficiency payment to producers. Thus, the EC could provide farm income support on domestic production through a high domestic wheat price, deficiency payments, or a combination of both. The level of income support would be a domestic policy decision.

This two-price policy has the advantage to the EC of supporting wheat producers' income while eliminating the export subsidy (for more details on impacts of this policy, see app. B). Also, the cost of the program would be under EC control and not subject to fluctuations in the world wheat price. The United States (and other wheat exporters) would gain because of the elimination of the export subsidy, and a reduction in EC wheat production and exports.

A positive side effect of the two-price policy is that EC producers would expect to receive the world price for their marginal production. Since the world price is unpredictably variable, producers and others in the EC marketing chain would have the incentive to hold speculative wheat stocks for export. With a relatively low world price, larger quantities of stocks would be held in anticipation of higher prices, and smaller stocks would be held at high prices. Thus, the EC with a two-price policy might absorb some of the shocks to the world wheat market, or at least the shocks created by their own variability in production.

Negative side effects of the two-price policy to the EC are that it would hold EC resources in wheat production, force production or marketing quotas on producers, and might result in large direct subsidies on production for the domestic market. And to the United States and other exporters, the policy would still protect the domestic market from access by imported grain.

The EC could put a two-price policy in place in stages. Once the domestic quota was in place, it could gradually be reduced from current production down to the quantity needed for domestic uses. At the same time, the domestic price and/or deficiency payment could be adjusted to meet farm income objectives. This type of two-price policy could be explored for all subsidized export products produced by the EC and Japan (and the United States) including grains, meat, and dairy products. Some components of the policy are already in place for the EC's sugar.

U.S. Retaliation with Export Subsidies

Supporters of a retaliatory export subsidy by the United States believe that the United States could win a subsidy war with the EC. If the United States applied export subsidies on meat, wheat, and other commodities, the EC would have to increase its subsidies to get rid of surpluses. The increased cost, it is believed, would force the EC to adopt a new policy more in line with U.S. wishes. We explore the retaliatory subsidy issue first by examining the expected domestic and market impact of a subsidy on any exported product, and then looking at the wheat market as an example.

Subsidizing U.S. exports of a given agricultural commodity allows exporting firms to buy the U.S. product and sell it abroad for less than the purchase price plus handling. Thus, they can underbid the competition. Exporters from other countries must lower their bids and the EC must increase its export subsidy to compete. The world price consequently falls and the United States increases its exports. Exporting firms bid grain out of U.S. stocks and away from U.S. markets in order to increase the export volume and obtain the export subsidy. The domestic price rises as a result. Competition among exporting firms pushes export volume to where the increase in domestic price plus the drop in the export price equals the value of the subsidy. The end result is a higher price to U.S. producers, an increased volume of U.S. exports, a lower world market price, and a larger subsidy forced on the EC, all consistent with the conventional wisdom about export subsidies. But how much would it cost the U.S. treasury? The wheat market is used to examine this question (for details, see app. A).

Suppose the United States imposed a wheat export subsidy of $40 per metric ton on all wheat exports prior to and during the 1980/81 and 1981/82 marketing years (a $40 subsidy is chosen because it is large enough to trace throughout the world wheat market). During the first year, the U.S. domestic price increases $20 to $25 per ton and the world price falls $15 to $20 per ton; the subsidy costs the United States roughly $1.9 billion. The lower world price increases the levy collected by the EC on wheat imports but also increases the subsidy on its wheat exports. Supposing that the EC exports about 9 million tons more than it imports during the first year, the net cost to the EC of the U.S. export subsidy is between $135 million ($15 × 9 million) and $180 million ($20 × 9 million). Thus, for every $10 paid by the United States in export subsidies, the EC pays $1 or less in additional export subsidies that first year.

Because of the higher domestic price, U.S. wheat farmers' sales increase by between $1.3 billion and $1.7 billion. On the other hand, the world price decrease is greater than the export volume increase that first year, so that the value of U.S. wheat export revenue falls slightly.

In successive years, after the world wheat market has time to adjust to the U.S. export subsidy, production falls and consumption rises in countries where changes in world prices penetrate the border. The demand for wheat imports consequently increases. Wheat production in the United States also responds to the higher domestic price. After these longer run adjustments, the world wheat price is only about $8 per ton below the price without the $40 export subsidy. The domestic price, however, is $32 above the no-subsidy level. Farmers receive additional income generated by the subsidy policy of an amount about equal to the export subsidy of $1.9 billion. The longrun impact of the subsidy on the EC, however, is to increase its annual wheat subsidy net costs by only $75 million, or less than 5 cents for each U.S. subsidy dollar. Thus, the main impact of the U.S wheat export subsidy is to transfer income from U.S. wheat consumers and taxpayers to U.S. wheat producers and foreign consumers.

Japan would benefit from the U.S. wheat export subsidy because it could obtain more implicit tariff revenues from the lower priced wheat imports.

U.S. export subsidies of other commodities might be more damaging to the EC than a subsidy of wheat. The United States has a large share of the world wheat market relative to the EC, but a small share of some other commodities. Nonfat dry milk and poultry—exported with subsidy by the EC—are two examples. The U.S. shares of world trade in these two commodities are approximately 12 and 30 percent, respectively. The EC's shares are 60 and 28 percent, respectively. In these markets, a dollar of U.S. subsidy would cost the EC much more than for wheat. But the same tradeoffs apply as with wheat; the main impact is to transfer income from U.S. consumers and taxpayers to U.S. producers and foreign consumers.

The above discussion assumes no retaliation by the EC or other exporters to a U.S. export subsidy. Their retaliation could reduce U.S. markets and further increase the cost of a U.S. export subsidy.

The type of subsidy used likely alters the above conclusions very little. Reduced interest charges on credit purchases, for example, turn out to be equivalent to a subsidized price. The net price to the buyer is reduced; other exporters will offer other bonuses to recapture the market and the net effect is a lower world price. The law of one price will ultimately prevail.

Production Control

Some economists and agricultural leaders suggest that the appropriate U.S. response to Japan and EC protective agricultural policies is to reduce grain exports, and thus U.S. grain production. These economists say that these countries will import about the same quantity of grain irrespective of the world price. When the world price is low, Japan and the EC collect large import tax (levy) revenues.[7] If the world price increases, those revenues decline. Thus, if the United States reduces production and exports, thereby forcing world grain prices to increase, the United States captures more of the value of the grain, while Japan and the EC receive less tax revenue at the border. This scenario is complicated, however, by the fact that other grain importers and exporters could take actions in the world grain market that tend to offset U.S. production and export control measures.

The wheat market again is used to illustrate the short-run and longrun impacts of a policy reducing exports and production by the United States. Suppose the United States used a cropland diversion or set-aside program that reduced wheat production 10 million tons per year prior to and during the 1980/81 and 1981/82 marketing years. Our analysis indicates that during the first year, prices increase substantially on the world market, but after all countries adjust to the U.S. policy, the impact on world price diminishes (app. A).

The 10-million-ton reduction in production increases the U.S. and world wheat price about 15 to 20 percent during the first year. U.S. wheat exports decrease, but the price rise is large enough so that total export revenues increase slightly. Producers' gross revenues from wheat sales increase slightly, but production costs decline, resulting in significant net income gains. Japan collects $200 million less in tariff revenues from imported wheat. Wheat imported by the EC also generates lower levy revenues. But since the EC is a net wheat exporter, the U.S. production control program results in net benefits to the EC of about $300 million.[8]

The longrun net impact of the U.S. production control program after the rest of the world adjusts is shown in appendix A. The annual 10-million-ton production reduction increases the world price only about 10 percent by that time. Also, the value of U.S. wheat exports actually declines $700 million. The major beneficiaries of the U.S. policy to reduce wheat production are the other exporting countries, including the EC.

This wheat market example illustrates how actions by third countries (those other than the United States, Japan, and the EC) tend to modify the intended result of U.S. production and export policies. The impacts of a similar policy for other grains or agricultural commodities are not the same as for wheat, but similar international forces exist to counteract the U.S. intent.

Exporter Cooperation

An alternative production control strategy would be for the United States to convince other exporters to join in a uniform policy of grain production control. By cooperating, the exporters could mutually gain from higher international grain prices with much of that gain being paid by the major importers *(7)*.

Again using the wheat market as an example, it is assumed that Canada, Argentina, Australia, and the United States each put a similar wheat production control program in place (app. A). The results show a greater price-increasing impact on the world market, benefiting all these countries. Contrary to the longer

[7] Because wheat marketing in Japan is controlled by the Food Agency, the import tax revenues are implicit rents accruing to the agency. The EC, however, does directly tax imports.

[8] The EC is a net importer of coarse grains. By limiting coarse grain exports, the United States could force the world price up and thus reduce EC's tariff revenues.

run impact of unilateral U.S. actions, export earnings increase for all exporters. Japan collects less revenue from its wheat imports. The EC, however, is a major beneficiary because its wheat exports are not reduced; rather, it benefits (by $300 million) from the higher world price and reduced subsidy. If similar action is taken by exporters in the coarse grain market, however, the EC loses tariff revenues.

Conclusions

Estimates of the costs of EC and Japanese wheat and coarse grain policies to the United States suggest that these policies have significantly affected income within the U.S. agricultural sector. U.S. exports of soybeans, soybean meal, corn gluten, other grain byproducts, and pulp have benefited, while exports of wheat and coarse grain have suffered. These results also suggest that liberalization of EC and Japanese grain policies would result in some small net benefit to the United States.

Selective changes in EC and Japanese policies could provide substantial benefits to the United States. EC subsidization of wheat exports and Japanese subsidization of rice exports appear especially costly. One option considered by the United States is retaliatory export subsidies. Analysis suggests that the United States would have to outlay considerable and costly subsidies on wheat to have any noticeable impact on EC budgetary costs. Subsidization of the other commodities, such as rice, would also be costly to the United States. Another U.S. policy option is a U.S. production control program. The analysis suggests that such a policy would reduce export earnings and provide the EC with savings on export subsidies to wheat.

To effectively negotiate the end of EC export subsidies, a policy allowing the EC to achieve its basic agricultural objectives is needed. With a two-price policy, production in excess of EC needs would be priced at world market levels, thereby supporting EC farm prices through internal EC income transfers. This alternative has features desired by the EC as well as the United States.

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Appendix A

Policy Analysis with a Simple Wheat Trade Model

A simple five-region world wheat trade model is used for this analysis. The trading regions are the United States, EC, Japan, Other Exporters (Canada, Australia, and Argentina), and Other Importers (all other countries). Although many simplifying assumptions are made to reduce a complex system of world trade into a small abstract model, these assumptions do not negate the model's conclusions.

The model represents the world wheat market during the 1980/81 and 1981/82 marketing years, referred to as the *base period*. During this period, world wheat trade is assumed to be in a longrun equilibrium. This model is a longrun static model, meaning that wheat production in all world price-responsive countries adjusts fully to any change in price. It also means that yearend stock levels may be ignored since stocks primarily adjust to shortrun disequilibrium conditions; that is, they do not respond to longrun changes. All transportation costs are omitted. All currencies are converted to their dollar equivalents. Also, all wheat and flour are assumed homogeneous and sold as grain at one annual price worldwide. Finally, all price-quantity relationships are assumed to be linear. The following regional wheat supply and demand equations are used.

United States (U):

Domestic Demand: $DU = 26.4 - 0.022P$ (1)

Domestic Supply: $SU = 53.6 + 0.067P$ (2)

Excess Supply: $XSU = SU - DU$

$= 27.2 + 0.089P$ (3)

Other Exporters (X):

Domestic Demand: $DX = 13.2 - 0.011P$ (4)

Domestic Supply: $SX = 34.4 + 0.043P$ (5)

Excess Supply: $XSX = SX - DX$

$= 21.2 + 0.054P$ (6)

European Community (E):

Excess Supply: $XSE = 9.0$ (7)

Japan (J):

Excess Demand: $XDJ = 5.5$ (8)

Other Importers (M):

Excess Demand: $XDM = 137.3 - 0.284P$ (9)

World (W):

Excess Supply: $XSW = XSU + XSX + XSE$

$= 57.4 + 0.143P$ (10)

Excess Demand: $XDW = XDJ + XDM$

$= 142.8 - 0.284P$ (11)

Price, P, is an average c.i.f. price in dollars per metric ton. All quantities are in million metric tons. Japan and the EC are assumed not to adjust the quantities of wheat traded in response to changes in world price. At P = $200, this system reproduces the base period quantities produced, consumed, and traded by the United States, and the quantities traded by the other three regions.

Domestic demand equations (1 and 4) have price elasticities of -0.2 and domestic supply equations (2 and 5) have price elasticities of 0.2 at P = 200. Excess supply equations (3 and 6) are obtained by subtracting demand equations from the supply equations. The elasticity of demand for U.S. wheat exports is assumed to be -1.5 in the long run when production has time to adjust to world wheat price changes. Given the elasticities of equations 6, 7, and 8, and the above assumption, the slope of equation 9 may be computed. The world excess supply equation is the sum of equations 3, 6, and 7. The world excess demand equation is the sum of equations 8 and 9.

The base period trade equilibrium is shown in appendix table 1. A total of 86 million tons are traded at a world price of $200. Exports from the United States, the EC, and Other Exporters are 45, 9, and 32 million tons, respectively. This is called the base solution. All other solutions are modifications of this base solution.

Free Trade by the EC and Japan

The excess supply equation for the EC and the excess demand equation for Japan are replaced in the free trade problem.

EC (E):

Domestic Demand:

$$DE = 53.91 - 0.033P \quad (12)$$

Domestic Supply:

$$SE = 32.41 + 0.080P \quad (13)$$

Excess Supply:

$$XSE = SE - DE = -21.51 + 0.113P \quad (14)$$

Japan (J):

Domestic Demand:

$$DJ = 7.32 - 0.0042P \quad (15)$$

Domestic Supply:

$$SJ = 0.37 + 0.0083P \quad (16)$$

Excess Demand:

$$XDJ = DJ - SJ = 6.95 - 0.0055P \quad (17)$$

These equations assume supply and demand elasticities of 0.4 and −0.2 at base period internal price levels. Equation 14 yields the base period quantity exported at a domestic price of $270 ($200 world price plus an export subsidy of $70). Equation 17 yields the base period quantity imported at a domestic price of $288 ($200 world price plus an import tariff of $88). Because of these changes, the world excess supply and demand equations also need revision.

World (W):

Excess Supply:

$$XSW = 26.89 + 0.256P \quad (18)$$

Excess Demand:

$$XDW = 144.25 - 0.289P \quad (19)$$

Appendix table 1—Annual production, use, and trade of wheat, five regions, average of 1980/81 and 1981/82 marketing years[1]

Region	Production	Use	Net exports[2]
	Million metric tons		
United States	67.0	22.0	45.0
EC	54.0	45.0	[3]9.0
Other exporters	43.0	11.0	32.0
Japan	.6	6.1	−5.5
Other Importers	280.4	360.9	−80.5
World	445.0	445.0	0

[1]Adjusted to account for changes in stock levels.
[2]Excludes within-region trade.
[3]The EC exported 13.7 million tons and imported 4.7 million tons for a net export of 9 million tons.

Equations 18 and 19 are solved with XSW = XDW to yield an equilibrium price of $215 and 82 million tons of wheat traded among the five regions (app. table 2).

Results

If Japan and the EC recently had no barriers to wheat trade, then they would produce less and consume more. The EC would still be a net exporter, but exports would be reduced by 6.2 million tons. Japan would increase imports only 0.4 million tons because of its inelastic demand and relatively low production. Free wheat markets in the EC and Japan would raise the world price and induce the United States and Other Exporters to expand production and exports, and cut consumption. The United States would increase wheat exports 1.4 million tons and increase the value of exports $1.0 billion. Other Exporters would also benefit. Wheat importers would reduce wheat imports in response to the higher price (app. table 2). EC wheat producers' income would fall substantially, but EC consumers would pay less for wheat products, and the CAP treasury cost of the wheat export subsidy would be eliminated.

United States Subsidizes Wheat Exports

In response to EC's subsidized wheat exports, some U.S. leaders argue that the United States should retaliate with its own wheat export subsidy. They argue that the U.S. subsidy would increase the cost of the EC's subsidy, that is, the EC would pay an even higher subsidy if the same quantity of wheat were exported.

We assume the United States subsidizes the price of wheat for export by $40 per ton before and during the base period. We also assume the EC pays a subsidy necessary to continue exporting a net quantity of 9 million tons. Consequently, equation (3) becomes:

$$XSU = 27.2 + 0.089\,(P + 40) \quad (20)$$

and equation (10) becomes:

$$XSW = 60.96 + 0.134P \quad (21)$$

Results show that the United States increases wheat exports 2.8 million tons but the world price drops to $192 per ton (app. table 3). In response to the lower world price, Other Exporters slightly reduce exports and importers increase imports.

Appendix table 2—Estimated impact on annual world wheat trade if all countries were free traders of wheat, base period[1]

Region	Trade volume			Trade value[2]		
	Base	Free trade[3]	Change	Base	Free trade[3]	Change
	Million metric tons			*Billion dollars*		
Exporters:						
EC	9.0	2.8	−6.2	1.8	0.6	−1.2
United States	45.0	46.4	1.4	9.0	10.0	1.0
Others	32.0	32.8	.8	6.4	7.1	.7
Importers:						
Japan	5.5	5.9	.4	1.1	1.3	.2
Others	80.5	76.1	−4.6	16.1	16.4	.3
Total	86.0	82.0	−4.0	17.2	17.7	.5

[1]Equilibrium price is $200 for the base solution and $215.88 for the free trade solution. See text for assumptions.
[2]Overestimates values for exporters since a c.i.f. price is used.
[3]Assumes Japan and EC had no wheat trade barriers during the base period.

Appendix table 3—Estimated impact on annual world wheat trade if the United States subsidized wheat exports, base period

Region	Trade volume			Trade value[1]			Change in subsidy or tariff
	Base	U.S. export subsidy[2]	Change	Base	U.S. export subsidy[2]	Change	
	Million metric tons			*Billion dollars*			
Exporters:							
EC	9.0	9.0	0	1.8	1.7	−0.1	[3]0.1
United States	45.0	47.8	2.8	9.0	9.2	.2	[4]1.9
Others	32.0	31.6	−.4	6.4	6.0	−.4	0
Importers:							
Japan	5.5	5.5	0	1.1	1.0	−.1	[5]0
Others	80.5	82.9	2.4	16.1	15.9	−.2	0
Total	86.0	88.4	2.4	17.2	16.9	−.3	0

[1]Overestimates values for exporters since a c.i.f. price is used.
[2]The United States is assumed to pay a $40 per ton export subsidy on all wheat exports. World price, in the revised equilibrium, drops to $191.66. The U.S. domestic price increases to $231.66. The EC's and Japan's export subsidies and import tariffs are assumed to increase to maintain a constant domestic price.
[3]The EC's export subsidy increases $75 million.
[4]The value of the U.S. export subsidy (47.8 million tons × $40 per ton = $1.9 billion).
[5]Japan's import tariff revenue increases $46 million.

The United States appears to lose the treasury war. The U.S. export subsidy costs $1.9 billion but the added subsidy cost forced on the EC is only $0.1 billion. The export subsidy of $40 increases the U.S. domestic wheat price to $232 because of the expanded demand for U.S. exports. U.S. producers and consumers (in importing nations) obtain most of the benefits of the U.S. export subsidy. U.S. taxpayers and wheat consumers pay the bill.[1]

United States Reduces Wheat Production

A traditional farm policy approach to low farm income in the United States has been to restrict crop production by diverting land out of production. The reduced supply is believed to increase farm price. This policy alternative is examined with the simple wheat trade model by assuming that prior to and during the base period, the United States reduces wheat production below the base solution level by 10 million tons per year. Equation (2) is changed to:

$$SU = 43.6 + 0.067P$$

The impact of this policy on world wheat trade, especially on Japan and the EC, is shown in app. table 4. The lowering of U.S. wheat production reduces U.S. exports 7.9 million tons. The domestic market absorbs the remaining 2.1-million-ton reduction in supply. The reduced U.S. exports raise the world wheat price 11 percent.[2] The higher price induces other exporters to increase production and exports; importers are induced to increase production and decrease imports. Thus, the 7.9-million-ton decrease in U.S. exports is partially offset by expanded exports of other countries, but the main impact is to reduce imports. Since the longer run demand for U.S. wheat exports is elastic, the world price increase is less than the decrease in exports. Thus, the value of U.S. exports falls as a result of the reduction in U.S. production. The EC and the Other Exporters gain from the higher world price but Japan and the Other Importers lose.

Western Hemisphere and Australian Wheat Exporters All Cut Production

Another possible response to the EC wheat export subsidy is for the United States, Canada, Argentina, and Australia to jointly reduce production of wheat. It is

[1] The impact of the U.S. wheat export subsidy is quantitatively different during the first year of use. There is no opportunity for U.S. or foreign production response to the subsidy-induced price changes. International demand for U.S. wheat is more price-inelastic, in the range of −0.7 rather than −1.5 as assumed for the longrun analysis. During the first year, a $40 export subsidy raises the U.S. domestic wheat price $20 to $25 and lowers the world price $15 to $20. Relative to the longrun impact, the first-year impact shows a smaller boost in producer income, an actual decline in export revenues, but the EC is forced to pay a larger subsidy on its wheat exports, about twice the longer run cost.

[2] If the world price was being supported by the U.S. loan rate, a cut in U.S. production might not increase world price. In the short run, reduced production might only reduce U.S. stocks. If the level of the loan rate could not be reduced, then a policy to cut wheat production reduces government costs of maintaining wheat stocks, but it might not affect world price.

Appendix table 4—Estimated impact on annual world wheat trade if the United States restricted wheat production by 10 million tons, base period

Region	Trade volume			Trade value[1]		
	Base	Reduced U.S. production[2]	Change	Base	Reduced U.S. production[2]	Change
	Million metric tons			*Billion dollars*		
Exporters:						
EC	9.0	9.0	0	1.8	2.0	0.2
United States	45.0	37.1	−7.9	9.0	8.3	−.7
Others	32.0	33.3	1.3	6.4	7.4	1.0
Importers:						
Japan	5.5	5.5	0	1.1	1.2	.1
Others	80.5	73.9	−6.6	16.1	16.5	.4
Total	86.0	79.4	−6.6	17.2	17.7	.5

[1]Overestimates value for exporters since a c.i.f. price is used.
[2]Because of reduced U.S. production, the world price increases to $233.42.

assumed that the United States cuts wheat production prior to and during the base period by 10 million tons (as in the previous analysis). Other Exporters also reduce production the same percentage (6.4 million tons). Equation (5) is changed to:

$$SX = 28.0 + 0.043P$$

Appropriate changes are also made in equations (6) and (10).

With cooperation among major wheat exporters, excluding the EC, the world price of wheat increases more than when the United States is the only country to reduce production (app. table 5). In this case, the United States reduces exports only 6.6 million tons compared with the 7.9-million-ton reduction in the previous example. The higher world (and U.S.) price results in a lower domestic consumption so that more is available for export.

The reduced quantity exported and the higher world price encourages Other Importers to increase production, and reduce consumption and imports. Because of the price increase, all wheat exporters (including the EC) show an increase in their value of wheat exports, and all importers show an increased cost of imports. Japan absorbs a large portion of the increase in costs because it does not reduce quantity imported.

Appendix B

An EC Two-Price Scheme

Although there are ways of restructuring EC agricultural policies to remove the export subsidy, to maintain farm income, the income lost by the removal of the export subsidy would have to be offset by additional income generated from domestic sales (see figure). Curves SS and DD represent domestic supply and demand for wheat in the EC. With current policies, the domestic price is supported at P_D. The world price at the EC border is P_W. At a price of P_D, farmers produce Q_X and consumers use Q_D; the difference $(Q_X - Q_D)$ is exported. To compete on the world market, exports must be subsidized at least by the difference between P_D and P_W. Thus, the minimum value of the export subsidy is represented by the area ABCD.

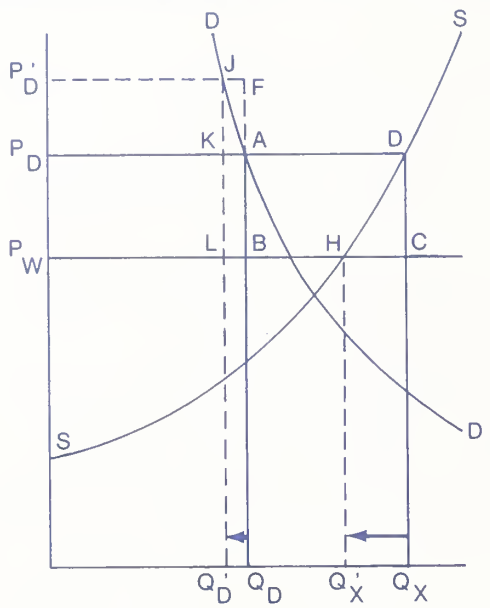
Now suppose the EC changed its policy and divided the wheat market into two components—domestic and export. A domestic production quota is set at Q_D' and all production within that quota receives price P_D'. Production over the domestic quota is sold on the export market at price P_W. Thus, EC farmers produce Q_X', sell Q_D' to the domestic market at price P_D', and export the remainder $(Q_X' - Q_D')$ at P_W. To maintain farm income at the level of the current CAP policy, the domestic price is even higher than the cur-

Appendix table 5—Estimated impact on annual world wheat trade if the United States and other exporters restricted wheat production, base period

Region	Trade volume			Trade value[1]		
	Base	Reduced exporter production[2]	Change	Base	Reduced exporter production[2]	Change
	Million metric tons			*Billion dollars*		
Exporters:						
EC	9.0	9.0	0	1.8	2.1	0.3
United States	45.0	38.4	−6.6	9.0	9.2	.2
Others	32.0	27.7	−4.3	6.4	6.6	.2
Importers:						
Japan	5.5	5.5	0	1.1	1.3	.2
Others	80.5	69.6	−10.9	16.1	16.6	.5
World	86.0	75.1	−10.9	17.2	17.9	.7

[1]Overestimates value for exporters since c.i.f. price is used.
[2]United States reduces production 10 million tons and Other Exporters reduce production 6.4 million tons—15 percent in each case. World wheat price rises to $238.40.

Hypothetical EC Wheat Market



rent support level. It is assumed that the domestic price P_D' is set so that the producer income gain in the domestic market (area $P_D' P_D KJ$) equals the producer loss on the remainder (area KLHD). Note that the area HCD represents foregone production costs.

With this two-price approach, less wheat is produced (reduced from Q_X down to Q_X'), less is consumed at home (reduced from QD to QD'), and less is exported, depending on the production decline relative to the consumption decline.

For the United States, the two-price approach has at least three desirable characteristics. First, wheat production above EC domestic needs is produced in response to world prices, not supported prices. Second, the costs of the EC farm income support policy are absorbed by the EC's domestic market rather than being partially paid by exporting countries. Third, the two-price approach encourages EC producers to hold buffer wheat stocks. Since producers are exposed to the variable world wheat price, they have an incentive to manage the marketing of their above-quota grain to maximize profits. Stocks grow when world prices are relatively low, and stocks are depleted when world prices are high. The EC absorbs at least some of the variability in world grain supplies caused by their own producers as a result.

An alternative way to administer the domestic quota is to provide producers with a deficiency payment as well as a supported price. Suppose that producers are paid P_D for wheat within the domestic quota and also receive a deficiency payment equal to the difference between P_D' and P_D (see figure). Under this approach, domestic consumption is at Q_D, the same as with current wheat policy. Production is Q_X', as above, but exports drop to Q_X' minus Q_D. For producer income to remain constant, the added revenue ($P_D' P_D AF$) must offset the revenue loss (ABHD). Administrators of the two-price policy could choose alternate domestic wheat price levels and offsetting deficiency payments which achieve the farm income objective. With a lower domestic price, domestic consumption (and the domestic quota) increases, but the deficiency payment also increases to maintain farm income.

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Agriculture in Western Europe

Western Europe accounted for $11.8 billion or 27 percent of U.S. agricultural exports in 1981. The European Community (EC), a grouping of 10 countries within Western Europe, is the largest customer for U.S. agricultural exports. The value of our farm commodities shipped to the EC totaled $9.1 billion in 1981. Spain is our major market in Western Europe outside the EC, although other non-EC countries are important outlets. Sweden, for example, took $187 million of U.S. ag products in 1981. With U.S. agricultural policy and exports so closely linked to events and trends in the European market, a number of research studies have been carried out to gain a fuller understanding of agricultural policies and future developments in Western Europe. Three reports available through GPO examine the effects of EC and Swedish agriculture on U.S. agricultural policy and exports:

Developments in the Common Agricultural Policy of the European Community examines the directions the EC's Common Agricultural Policy (CAP) may take in order to avert a budget crisis and reports the implications for trade with the U.S. and other countries. According to authors Timothy Josling and Scott Pearson, the ever-increasing farm subsidies prescribed by the CAP will seriously harm the EC's ability to meet other policy needs and will hinder enlargement of the Community to include Spain and Portugal. EC policymakers may have to either keep prices low directly or with producer taxes, or limit quantities covered by subsidies. June 1982. 88 pp. $5.50.

The EC Market for U.S. Agricultural Exports: A Share Analysis assesses the market potential for all major U.S. ag exports to the EC. Author Harold McNitt finds that the United States will continue as a leading supplier to the EC of soybeans, sunflowerseed, corn and corn gluten feed, peanuts, citrus pulp, some animal products, and soybean meal during 1981-85. EC trade policies, however, sharply restrict imports of most fruits and vegetables, processed foods, and meats. March 1983. 92 pp. $5.00.

Sweden's Agricultural Policy, one of the few English sources on contemporary Swedish agricultural policy, covers the major provisions of Sweden's 1982-84 farm program. "An accurate and concise presentation," says the Swedish Ambassador to the United States. Sweden's policy objectives are to reduce government subsidies for agricultural exports (a major aim of U.S. world trade policy), to cut back on consumer food subsidies and farmer compensation programs, and to make the levies on imports more responsive to market conditions. Chief U.S. exports to Sweden include fruits, vegetables, nuts, and tobacco, which are relatively unaffected by Swedish import levies, and grains. October 1982. 44 pp. $4.25.

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