

Agriculture and the GATT: A Time for Change

By Alan Barkema, David Henneberry, and Mark Drabenstott

World trade in agriculture is near a crisis. Countries from all corners of the globe agree with that conclusion. A decade of sluggish demand, swelling supply, and burgeoning surplus has led to sharp farm trade frictions. Export subsidies have proliferated. The costs of national farm programs have soared as countries have encouraged production that markets could not absorb. In the United States alone, farm program costs increased tenfold between 1980 and 1986, although they have declined somewhat the past two years. The rising trade frictions and soaring budgets have prompted countries to seek new answers to the farm trade problem.

To avert a farm trade crisis, the United States and many other countries are looking to one forum, the General Agreement on Tariffs and

Trade (GATT). The GATT is the referee of international trade. By observing mutually approved rules, member countries strive to lower trade barriers and encourage international commerce. But so far the GATT has not solved agriculture's trade problem, because the current rules on farm trade are decidedly weak. The current Uruguay Round of GATT negotiations marks a historic crossroads as countries attempt to rewrite the rules on agriculture and correct the international farm trade problem. The leading reform proposal, advanced by the United States, would eliminate in ten years all farm subsidies that distort agricultural trade.

This article identifies historical and economic factors that have brought agriculture to the forefront of the Uruguay Round and examines the potential effects of reforming agricultural trade rules in the GATT. The article concludes that liberalizing trade in agriculture offers significant benefits to the U.S. and global economies. While farmers in some countries will suffer losses, gains to consumers through lower taxes and food prices would more than offset those losses. The article begins by reviewing the 40-year history of failure

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to address agriculture in the GATT, an essential backdrop to the current round of negotiations. The second section identifies market forces that have contributed to agriculture's trade crisis of the 1980s, making agriculture the centerpiece of the Uruguay Round. The third section analyzes the implications of agricultural trade liberalization, assessing the impact on the world's farmers and consumers. The last section draws conclusions.

GATT and agriculture: a history of flaws

The inability to address agriculture successfully throughout the 40-year history of the GATT has been a major factor in bringing agriculture to the center of trade discussions. Repeatedly, agriculture was given special treatment and set aside, even as steady and more substantial progress was made in liberalizing trade in some other sectors. But the past failure to deal with agriculture has produced trade frictions and budget pressures in the 1980s that have prompted a revisiting of agriculture in the GATT. This section reviews the history of agriculture in the GATT, pointing out how the failures of previous negotiations have made agriculture a critical subject in the Uruguay Round.

The mission and methods of the GATT

The GATT was established in 1948 to foster international trade through the progressive removal of trade-distorting government policies. Countries supported the GATT and its mission because of a sharp rise in trade protection following World War II. After the war, a number of countries adopted stringent tariff barriers to protect their war-ravaged economies from foreign competition. Many countries grew concerned that rising protectionism would lead to an economic downturn. With no existing organization to address global trade problems, discussions of

possible newly chartered organizations began, and the GATT was the result.

At the outset, the GATT gained broad support; it now claims 95 member countries. All 24 industrial nations that compose the Organization for Economic Cooperation and Development are members, in addition to almost 70 developing countries. Another 31 countries also abide by GATT trade rules. One significant nonmember country is the Soviet Union, although it regularly participates in GATT discussions in an unofficial basis.

The GATT has a number of tools to achieve its objectives. The GATT charter outlines a set of common ground rules for international trade and specifies a process for resolving trade disputes among member countries. The GATT also sponsors multilateral rounds of negotiation among its member countries to encourage more liberalized trade. These negotiating rounds are viewed as the best opportunity to strike agreements to reduce trade-distorting practices.

Agriculture in previous GATT negotiations

Agriculture has been a singular disappointment in the postwar rounds of GATT multilateral negotiations. Member countries have resisted nearly every attempt to assault the broad array of trade-distorting practices in agriculture. This story of failure has been written by many countries, including the United States.¹

The GATT charter. Even at its very beginnings, the GATT gave special status to agriculture. Article XI of the GATT charter allowed import restrictions when "necessary to the enforcement

¹ For a review of the history of GATT developments that relate to agriculture, see T.K. Worley, "Agriculture and the GATT: Past and Future" (invited paper, XX International Conference of Agricultural Economists, Buenos Aires, August 1988).

of governmental measures which operate to restrict the quantity of the like product'' produced. In effect, the article allowed tariffs or quotas on agricultural imports that would compete with a country's domestic farm production. In addition, Article XVI permitted the use of both production and export subsidies, with only the weak requirement that the subsidizing country discuss its policy with other countries that might be affected. In short, international trade rules on agriculture gave way to domestic farm programs.

Ironically, it was the United States who insisted on these two articles. U.S. negotiators feared that the U.S. Senate would not ratify the GATT if it required the dismantling of the U.S. farm program. So, agriculture was given special treatment. Agriculture would be governed by domestic policies, and the trade rules would conform—quite unlike other sectors, where domestic policies were expected to conform to the new international trade ground rules. Reversing the role of domestic policies and international rules in agriculture has not worked well and is an underlying reason agriculture is center stage in the Uruguay Round.²

The irony of agriculture's beginning in the GATT is all the greater in light of the current positions of the United States and the European Community. The EC did not exist formally when the GATT charter was written. In fact, most European countries opposed the special language for agriculture. One of the first policies to bind together the EC after its founding in 1957, however, was the Common Agricultural Policy (CAP). That policy quickly evolved into a plan to prop up farm incomes in Europe through tariffs and subsidies. Today, the United States sharply opposes the trade distortions caused by the CAP,

but the CAP lies entirely within the loose bounds of the GATT rules on agriculture. The United States made a mistake 40 years ago and is now fully realizing the price of that mistake.

Early GATT rounds. Agriculture was notably avoided in the early rounds of GATT negotiations. Four rounds of talks were held between the late 1940s and early 1960s: Annecy, France (1949), Torquay, England (1950-51), Geneva, Switzerland (1955-56), and the Dillon Round (1960-62). Up to the Dillon Round, negotiations focused on liberalizing trade barriers, principally tariffs, for manufactured goods. The preoccupation with so-called border policies—export subsidies and import tariffs and quotas—overlooked the fact that national policies, like agricultural policies, bear important consequences for the international marketplace.

The Dillon Round was significant because the GATT officially sanctioned the CAP then. The CAP was ratified by European ministers in 1962 and became a subject of debate in the Dillon Round. The United States voiced concerns about the CAP but, in the end, acquiesced and allowed it to fall within the GATT rules. The United States apparently believed the CAP would help stabilize and further unify a Europe still recovering from the effects of the war.³ Furthermore, the United States did not expect the EC to fund the CAP nearly as much as it would in later years.

The Kennedy Round (1963-67). The Kennedy Round, initiated by the United States, made substantial progress in lowering tariffs worldwide but, once again, agriculture was excepted. Europe defended the CAP and was eager to maintain what had become the principal economic policy bind-

² See Dale Hathaway, *Agriculture and the GATT: Rewriting the Rules* (Washington, D.C.: Institute for International Economics, September 1987), chap. 5.

³ U.S. agriculture did gain one concession in the Dillon Round. The EC agreed not to impose variable levies on the importation of U.S. oilseeds and nongrain feeds. Since then, that has proved a valuable benefit to U.S. producers, especially for soybeans.

ing together the diverse EC member countries. The EC did offer a concept to equalize subsidies across major producing nations, but other countries, including the United States, were unwilling to accept constraints on their own farm programs.⁴

The Tokyo Round (1973-79). The Tokyo Round was the first in which a strong attempt was made to treat agriculture like other sectors. The United States proposed that subsidies be limited for manufactures and farm goods alike and that farm goods be subject to codes on nontariff barriers. The EC balked at simultaneous consideration of farm and nonfarm trade, wanting to protect the CAP. The Europeans won a procedural vote that separated agriculture from other matters under negotiation. That proved decisive in stalling any progress on agriculture. As domestic policies became more embedded in the structure of agricultural production, the stage was set for even more trade friction in agriculture.

The Uruguay Round

The Uruguay Round of GATT negotiations, the eighth since 1948, began in 1986. The round was scheduled to run four years, and 14 subjects for negotiation were identified. But many members agreed that agriculture topped their list of problems to address.

The Uruguay Round offered an early promise of success in bringing agriculture more fully under the auspices of the GATT. That promise was stated clearly in the broad language of the

⁴ This concept was called the "moutant de soutien," or "self-sufficiency norms." Under this concept, countries would mutually agree to the percentage of their domestic market for various farm commodities that would be protected. In effect, it amounts to a market sharing agreement.

ministerial declaration that launched the new negotiations in Punta del Este, charging the participants to address policy measures that have either a direct or an indirect effect on agricultural trade. Unlike previous GATT rounds, therefore, the Uruguay Round would place national farm programs at the center of the bargaining table along with the border policies traditionally considered in the GATT. In brief, the Uruguay Round offered an opportunity to strike a new accord in agricultural trade and bring the trade effects of national farm programs under the GATT's jurisdiction.

The ministerial midterm review of the Uruguay Round, just completed in Montreal, casts doubt on success in agriculture. The United States and the EC were unable to reach any agreement on agriculture. As in most previous rounds, they are the two principal players. The United States wants to eliminate all trade-distorting agricultural policies over the next decade; the EC wants to keep current policies in place for the foreseeable future.

The history of agriculture in the GATT speaks loudly on what must occur for the Uruguay Round to succeed where others have failed. To date, countries have put national agricultural policies beyond the reach of international trading rules. Domestic political, economic, and social objectives for farmers and rural dwellers have been deemed too important to bring farm programs under the discipline of the GATT. To succeed in freeing agricultural trade, the GATT must do what it was created to do: establish a set of trade rules that will guide the tailoring of domestic policies, not the reverse.

Agriculture's importance in the Uruguay Round

Why do many countries consider agricultural policy reform so important in the Uruguay Round? The answer is that GATT participants

CHART 1
World grain production and consumption



have been forced to consider a fresh approach to farm and trade policy by the burgeoning costs of national farm programs in the sluggish agricultural trade environment of the 1980s. This section reviews the abrupt shift in agricultural market forces that has provided renewed impetus to negotiate reforms of farm policies in the Uruguay Round. The box at the end of the article provides a description of the effects of national farm policies on international trade and a summary of the technical problems encountered when measuring those effects.

Renewed focus on agriculture in the Uruguay Round can be attributed largely to an abrupt shift in the underlying balance of supply and demand in the world food market. Shifting patterns of trade in grains—the principal commodities included in most national farm programs—have been a major source of friction in agricultural trade. The 1970s were a decade of strong growth

in world grain production, consumption, and trade. Throughout the decade, world grain production and consumption were fairly closely matched (Chart 1). Supply and demand grew at a brisk rate of just under 3 percent per year (Table 1). Yet widely differing patterns of production and consumption around the globe gave rise to an expanding flow of grain from surplus areas to deficit areas. In the exporting countries, rising yields and a modest expansion in acreage supported production growth of nearly 4 percent per year. But consumption growth among exporters was nearly flat, leaving large reserves of grain available for export. In importing countries, a surge in consumption—fueled by strong income growth and growing populations—outpaced grain production. The result of the mismatched location of growth in production and consumption was a swift expansion in world grain trade at an average annual rate of nearly 6 percent.

TABLE 1

Trends in world grain production, consumption, and trade
(annual rates of growth, percent)

| | 1970-79 | | | 1980-85* | | |
|----------------|----------------------|----------------------|-------|--------------------|--------------------|-------|
| | Major** importers | Major** exporters | World | Major importers | Major exporters | World |
| Harvested area | 0.6 | 1.7 | 0.9 | -1.4 | -0.1 | -0.5 |
| Yield | 1.9 | 2.1 | 2.0 | 4.1 | 2.3 | 3.1 |
| Production | 2.5 | 3.8 | 2.9 | 2.7 | 2.2 | 2.7 |
| Consumption | 3.2 | 0.3 | 2.6 | 1.2 | 1.6 | 1.8 |
| World trade | — | — | 5.9 | — | — | -1.2 |

*The data period ends in 1985 to exclude the effects of the U.S. Food Security Act of 1985. See footnote 5.
 **Major importers include Brazil, China, eastern Europe, Egypt, Japan, Korea, Mexico, Saudi Arabia, Taiwan, and the USSR. Major exporters include Argentina, Australia, Canada, South Africa, Thailand, and the United States. In addition, the member-countries of the European Community are included as net importers in the 1970s and as net exporters in the 1980s.
 Source: Importer and exporter growth rates are derived from unpublished Foreign Agriculture Service data. World growth rates are derived from the USDA's *World Supply and Demand Estimates*.

The explosion in world grain trade during the 1970s fizzled in the early 1980s.⁵ Grain yields, supported by the advance of production technology, rose even more rapidly than in the 1970s in both importing and exporting countries. The expansion in production enabled some countries that were net importers in the 1970s—especially the EC—to become net exporters in the 1980s. Overall, world grain production continued to expand, despite a slight decline in acreage. But growth in world grain consumption plummeted. The decline in consumption growth was especially pronounced among importing countries, where

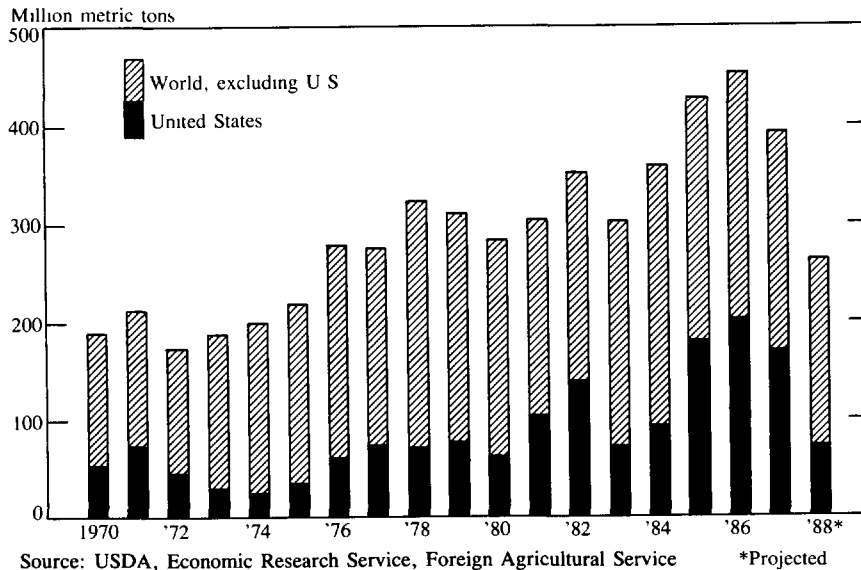
food demand was constrained by sluggish income growth and rising debt burdens. As a result of larger production and slack demand, world grain trade fell, and grain inventories soared to record levels in the United States and elsewhere by 1986 (Chart 2). In effect, burgeoning inventories of grain in the mid-1980s chronicled the failure of world grain production to adjust to more sluggish demand.

Inflexible farm policies around the globe were a principal reason that supply did not adjust to the slump in demand in the 1980s. Production incentives—an important part of policies designed to support farm incomes in Japan, the European Community, and the United States—overrode market signals that clearly pointed to less production. Export subsidies pushed mounds of surplus grain onto the world marketplace as world demand sagged.

The costs of maintaining such policies as world food demand weakened were enormous, and farm

⁵ This discussion covers the period from 1980 to 1985. Beginning in 1986, growth in world grain production slowed due to the sharp curtailment of U.S. grain production with the implementation of the Food Security Act of 1985 (FSA). Under the supply control provisions of the FSA, U.S. grain production fell about 20 percent from 1985 to 1987.

CHART 2
World and U.S. grain inventories



program budgets soared. In the United States, annual Commodity Credit Corporation (CCC) outlays, a principal measure of farm policy costs, rose from about \$4 billion in 1981 to a peak of nearly \$26 billion in 1986 as the United States adopted a more aggressive market posture with the Food Security Act of 1985. Similarly, the cost of the CAP grew from nearly \$12 billion in 1981 to nearly \$22 billion in 1986 as the Europeans expanded their budget outlays to meet the toughened U.S. competition. Thus, the GATT negotiators faced a seemingly unending upward spiral in farm program costs as the Uruguay Round began.

More recently, however, the North American drought of 1988 may have temporarily alleviated pressures for policy reform in the Uruguay Round. The drought reduced U.S. grain production in 1988 by nearly 30 percent. As a result, world grain inventories are expected to fall more

than 40 percent from the record level of 1986.⁶ Grain prices have risen more than a third to ration smaller supplies, and higher market prices translate into smaller farm program costs. CCC outlays in the United States fell to \$13 billion in fiscal 1988 and are expected to be only \$11 billion in 1989. Although the EC's agricultural program expenditures rose to \$36 billion in 1988, higher market prices resulting from the U.S. drought will at least temporarily limit increases in EC farm

⁶ The United States produces and stores more grain each year than any other country. Therefore, the drought-reduced U.S. crop in 1988 had a large effect on world grain supplies. The drought-riddled U.S. grain crop in 1988 accounted for about 12 percent of world production, down from an average of nearly 20 percent from 1980 to 1985. The United States currently holds about 28 percent of world grain stocks, down from about 45 percent in 1986.

policy costs.⁷ In effect, the drought-induced reduction in U.S. grain supplies may have curtailed pressure for farm policy reform by opening export opportunities for foreign suppliers and limiting national farm program costs. But world grain production is likely to rebound quickly with a return to normal weather in North America. In the absence of farm policy reform, the conditions of chronic surplus that gave rise to the agricultural trade crisis of the 1980s are likely to return quickly.

In summary, a combination of sluggish growth in world food demand, huge exportable surpluses, and soaring costs of national farm programs are responsible for the intensifying trade frictions of the 1980s. The trade-distorting effects of national farm programs were generally concealed during the 1970s by robust growth in grain demand. But when growth in world food demand collapsed in the 1980s, rising floors of government support precluded the production cutback that markets were signaling. As a result, inventories of agricultural commodities and the budget outlays that subsidize their production and export soared when growth in world food demand slowed abruptly.

The Uruguay Round got underway just as policy-induced distortions in agricultural trade reached crisis proportions. Although the 1988 drought may have temporarily relieved pressures for worldwide farm policy reform, the agricultural trade crisis is likely to return in the absence of significant progress in the Uruguay Round. In brief, the potential cost of another failed round of agricultural farm and trade policy negotiations has escalated sharply in the 1980s.

⁷ No estimates of EC agricultural expenditures for 1989 are available. EC expenditures data were obtained from the Economic Research Service, U.S. Department of Agriculture.

Policy reform: implications for farmers and consumers

Most member countries in the GATT agree that a reform of international trading rules for agriculture is needed. Countries also agree that reducing farm trade distortions will necessitate an overhaul of their national farm policies. But countries differ sharply on how much and how soon trade-distorting farm policies should be reduced.⁸

Three principal proposals for reform of farm and trade policies have been made in the Uruguay Round. The United States proposes the total elimination of all trade-distorting practices in agriculture over the next ten years. The Cairns Group, a loose coalition of 13 agricultural producing nations, advocates a freeze of agricultural subsidies followed by a period of reduction in accordance with existing GATT procedures.⁹ The European Community proposes to stabilize world agricultural markets, share those markets among major exporters, and reach only vague agreement on the need for long-term reduction in agricultural subsidies. In essence, the EC advocates the status quo.¹⁰

The key question is: What do the three proposals mean for farmers and consumers in the United States and elsewhere? The best way to answer that question with existing economic

⁸ The Uruguay Round is focusing on reducing farm subsidies that distort trade. But improving market access and harmonizing food health and safety regulations are two other farm-related issues included in the negotiations.

⁹ The number of grain-producing nations allied as the Cairns Group has fluctuated from 11 to 16. The following 13 nations signed the midterm positions statement: Argentina, Australia, Brazil, Canada, Chile, Colombia, Hungary, Indonesia, Malaysia, New Zealand, Philippines, Thailand, and Uruguay.

¹⁰ Canada, Japan, and the Nordic countries (Finland, Iceland, Norway, and Sweden) have also made proposals for agriculture in the Uruguay Round. Nevertheless, the most attention has been given to the U.S., Cairns Group, and EC proposals.

models is to analyze the effects of complete elimination of agricultural subsidies. That amounts to an examination of the U.S. proposal. The remaining proposals can then be viewed as two variations on a theme of trade liberalization, namely, partial elimination of subsidies (the Cairns proposal) and minimal elimination of subsidies (the EC proposal).

This section summarizes current research that estimates the effects of complete agricultural trade liberalization. The starting point for the analysis is an assessment of how current farm policies affect producers and consumers in several key countries. With existing subsidy levels as a benchmark, the effects of liberalization on food prices and on the welfare of consumers and producers can then be analyzed.

Current farm subsidies

Current farm policies in developed countries generally help farmers and hurt consumers. By artificially raising farm prices, either directly through cash payments or indirectly through supply controls, farm incomes rise, and the food and tax bills of consumers also increase. Because many farm policies result in a misallocation of resources, however, the policy-induced increase in consumer food costs and taxes is greater than the increase in farm incomes. In brief, farm policies in the developed countries are designed to transfer income from consumers to producers, but many of those policies are notoriously inefficient in meeting that objective.¹¹

¹¹ In addition to the inefficient transfer of income from producers to consumers, farm programs may also be inefficient in distributing income among farmers. For example, large farms receive a disproportionate share of farm program payments in the United States. Thus, the payment distribution would be inconsistent with a social objective of providing income support for small farms. See the 1987 Economic Report of the President, pp. 147-78.

The Organization for Economic Cooperation and Development estimates that farm subsidies and consumer costs from existing farm programs are substantial.¹² The OECD measured the effects of farm policies on farmers and consumers in several industrial countries for the period from 1979 to 1981. The Producer Subsidy Equivalent (PSE) was the common measure of farm subsidy, and the Consumer Subsidy Equivalent (CSE) was the corresponding measure of consumer costs.¹³

The OECD concluded that the benefits U.S. farmers received from farm programs were intermediate to the benefit farmers in other regions received (Table 2). Annual farm program benefits amounted to about 16 percent of the total value of U.S. farm products compared with only 5 percent in Australia and nearly 60 percent in Japan. The OECD study also showed that, in general, the most protected farm commodities are dairy products, sugar, and beef.

The OECD analysis clearly shows that consumers pay dearly for farm policies. In the United States, for example, consumers pay—in the form of higher taxes and higher food prices—nearly 8 percent more for sugar and nearly a fourth more for milk products than they would in the absence of all farm programs (Table 2). But U.S. meat

¹² See Organization for Economic Cooperation and Development, *National Policies and Agricultural Trade* (Paris: OECD, May 1987). For a discussion of how the OECD measures farm subsidies and their cost to consumers, see chap. 2 and annex 2.

¹³ The Producer Subsidy Equivalent (PSE) is the payment that would be required to compensate farmers for the loss of income resulting from the removal of a given policy measure. Expressed as a percentage, it is that part of the value of output accounted for by government assistance of various kinds. Direct payments, price enhancement programs, and indirect benefits such as research and extension are all included. The Consumer Subsidy Equivalent (CSE) corresponds to the implicit tax on consumption due to higher domestic food prices as well as the direct government cost of the programs. For a more complete discussion of the PSE and CSE, see the box at the end of the article.

TABLE 2

The effect of agricultural programs on producers and consumers, 1979-81
 (Producer Subsidy Equivalents and Consumer Subsidy Equivalents, percent*)

| | United States | | Canada | | EC | |
|--------------------------|---------------|-----------|-----------|-----------|--------------------------|-----------|
| | Producers | Consumers | Producers | Consumers | Producers | Consumers |
| Wheat | 17.2 | N.A. | 17.6 | 2.7 | 28.1 | -16.8 |
| Coarse grains | 13.1 | N.A. | 13.3 | -1.1 | 27.9 | -19.2 |
| Rice | 5.4 | N.A. | — | .0 | 13.6 | -1.8 |
| Beef and veal | 9.5 | 1.0 | 13.1 | -1.1 | 52.7 | -12.3 |
| Pork | 6.2 | 1.1 | 14.5 | .0 | 21.7 | -4.4 |
| Poultry | 6.3 | 2.4 | 25.7 | -6.9 | 16.4 | -5.0 |
| Dairy | 48.2 | -24.2 | 66.5 | -25.5 | 68.8 | -23.7 |
| Sugar | 17.1 | -7.7 | 12.5 | -2.2 | 25.0 | -23.4 |
| Average, all commodities | 16.0 | N.A. | 23.9 | N.A. | 42.8 | N.A. |
| | Australia | | Japan | | All industrial countries | |
| | Producers | Consumers | Producers | Consumers | Producers | Consumers |
| Wheat | 3.4 | 3.4 | 95.8 | -25.4 | 21.5 | N.A. |
| Coarse grains | 2.9 | .0 | 107.1 | -4.7 | 19.0 | N.A. |
| Rice | 14.4 | -41.0 | 68.8 | -44.5 | 61.0 | N.A. |
| Beef and veal | 4.0 | .0 | 54.9 | -29.2 | 30.0 | N.A. |
| Pork | 2.7 | .0 | 14.0 | -8.4 | 16.5 | N.A. |
| Poultry | 2.5 | .0 | 20.5 | -10.4 | 14.0 | N.A. |
| Dairy | 20.8 | -11.6 | 83.3 | -30.7 | 63.5 | N.A. |
| Sugar | -5.0 | 21.7 | 48.4 | -18.9 | 26.6 | N.A. |
| Average, all commodities | 4.7 | N.A. | 59.4 | N.A. | 32.1 | N.A. |

*Producer effects measured in Producer Subsidy Equivalents (PSEs). Positive numbers indicate subsidies while negative numbers indicate programs that actually tax producers. Consumer effects measured in Consumer Subsidy Equivalents (CSEs). Negative numbers indicate a tax on consumers, while positive numbers indicate a subsidy. See footnote 13.

Source: Organization for Economic Cooperation and Economic Development (OECD), *National Policies and Agricultural Trade* (Paris, May 1987), Table 2, p. 117 and Table 3, p. 118.

TABLE 3

Effect of agricultural programs on domestic farm prices, 1980-82 average and 1988
(ratio of producer to border prices)

| | United States | | EC | | Japan | | All industrial economies | |
|-----------------------------------|---------------|------|---------|------|---------|-------|--------------------------|------|
| | 1980-82 | 1988 | 1980-82 | 1988 | 1980-82 | 1988 | 1980-82 | 1988 |
| | Wheat | 1.15 | 2.20 | 1.40 | 3.40 | 3.90 | 8.00 | 1.25 |
| Coarse grains | 1.00 | 1.60 | 1.40 | 2.40 | 4.30 | 11.65 | 1.15 | 1.75 |
| Rice | 1.30 | 1.85 | 1.35 | 2.40 | 3.35 | 8.20 | 2.50 | 5.65 |
| Beef and veal | 1.10 | 1.30 | 1.95 | 2.75 | 2.80 | 5.40 | 1.50 | 2.05 |
| Pork and poultry | 1.00 | 1.00 | 1.25 | 1.60 | 1.50 | 1.90 | 1.20 | 1.40 |
| Dairy | 2.00 | 2.20 | 1.75 | 2.50 | 2.90 | 5.55 | 1.90 | 2.55 |
| Sugar | 1.40 | 2.05 | 1.50 | 2.80 | 3.00 | 7.10 | 1.50 | 2.60 |
| Weighted average, all commodities | 1.20 | 1.50 | 1.55 | 2.25 | 2.35 | 3.80 | 1.40 | 2.00 |

Source: Rod Tyers and Kym Anderson, "Liberalizing OECD Agricultural Policies in the Uruguay Round: Effects on Trade and Welfare," *Journal of Agricultural Economics*, 30(2) (May 1988), Table 1, p. 204.

prices are slightly lower due to the farm programs. Among the OECD countries, the consumer tax is highest in Japan, where consumers are paying about 30 percent more for beef and milk and 45 percent more for rice because of Japan's farm policy. Similarly, European food costs, while not quite as high as in Japan, are still much higher under the CAP than they would be without it.

The OECD measures provide a useful gauge of farm policy distortions, but the measures are somewhat dated. Substantially higher budgets for farm programs around the world suggest that policy-induced distortions in agricultural markets have increased in the 1980s. Thus, the world farm policy problem is bad and growing worse. Research by others bears this out. Tyers and Anderson estimate that domestic commodity prices in industrial economies are twice international market prices in 1988, compared with only 40 percent higher in the 1980-82 benchmark

period (Table 3).¹⁴ They use the nominal rate of protection, or the ratio of domestic and international farm prices, instead of the PSE to estimate farm policy effects. This alternative measure of the impact of current farm programs rises as policy-induced trade distortions increase.

Overall, an examination of current farm programs indicates which consumers and producers would likely experience the greatest adjustments if agricultural trade were liberalized. Although the measures of subsidization are not precise, different methods of analysis point to similar conclusions. U.S. farmers are subsidized comparatively less than farmers in many other

¹⁴ Rod Tyers and Kym Anderson, "Liberalizing OECD Agricultural Policies in the Uruguay Round: Effects on Trade and Welfare," *Journal of Agricultural Economics*, 30(2) (May 1988), pp. 197-215.

developed countries, while U.S. consumers generally bear less cost than their counterparts abroad. Meanwhile, farmers in Japan enjoy the highest subsidy levels, and EC farmers also receive large program benefits. Correspondingly, Japanese and European households pay substantially higher food prices and taxes due to farm programs.

Effects of agricultural trade liberalization

The most immediate and directly measurable benefit from farm and trade policy reform is a reduction in government expenditures on farm programs. For example, direct budget costs of farm programs in the United States and the European Community have totaled nearly \$275 billion since 1981.¹⁵ Under farm policy reform, these expenditures would almost certainly fall sharply, ultimately reducing the consumer's tax burden on both sides of the Atlantic.

An assessment of the potential for reducing government budgets, however, is an incomplete analysis of the likely effects of farm policy reform. Government budgets measure only the tax burden that falls on consumers as a result of farm programs. In addition to increased taxes, consumers also pay higher food prices as a result of farm programs. Moreover, different farm policy tools provide different balances of tax and food price effects. A complete analysis must include both tax and price effects of farm and trade policy liberalization on consumer and producer incomes.

For economic researchers, estimating the effects of agricultural trade liberalization is a journey into the unknown. Government budget savings from farm policy liberalization can be

estimated directly, but budget savings do not fully reflect the advantages of policy liberalization. A more complete assessment of the effects of farm policy reform can be derived from economic models that take into account effects of policy reform on both consumers and producers. Because economic models can only be constructed from data drawn from periods when trade-distorting policies were in force, it is difficult to estimate how agricultural supply and demand would change in a world in which those distortions are withdrawn. Nevertheless, a number of trade-liberalization models have been developed.

In general, the models simulate future world supply and demand conditions with and without current farm subsidies. A benchmark projection is made assuming subsidies are continued. The subsidies are then removed, the models are resimulated, and the two outcomes are compared. The model parameter that matters most in the comparison is the price elasticity of supply, that is, the way that farm producers respond to changes in market farm prices. Here, the models can rely only on past production responses, which do not accurately reflect supply decisions when no subsidies are available.¹⁶

Comparing results from a number of models is perhaps the best way to approximate the impact of trade liberalization. Projections from four models are compared here: Tyers and Anderson, OECD, USDA, and the International Institute for Applied Systems Analysis (IIASA).¹⁷ The results

¹⁶ For a technical comparison of trade liberalization models, including the four models cited in the article, see Bruce Gardner, "Recent Studies of Agricultural Trade Liberalization" (invited paper, XX International Conference of Agricultural Economists, Buenos Aires, August 1988).

¹⁷ Model results for the four models are reported in the following sources: 1.) Rod Tyers and Kym Anderson, "Liberalizing OECD Agricultural Policies in the Uruguay Round: Effects on Trade and Welfare," *Journal of Agricultural Economics*, 30(2) (May 1988), pp. 197-215. 2.) Organization for Economic

¹⁵ See footnote 7.

TABLE 4

The effect of multilateral agricultural trade liberalization on world market prices for agricultural products (percent change)

| | Tyers and Anderson | | OECD* | USDA | IIASA |
|-----------------------------------|--------------------|------|-------|------|-------|
| | 1988 | 1995 | | | |
| Wheat | -5 | 25 | -1 | 10 | 18 |
| Coarse grains | -2 | 3 | -3 | 7 | 11 |
| Rice | 0 | 18 | 1 | 10 | 21 |
| Beef and veal | 22 | 43 | 15 | 10 | 17 |
| Pork and poultry | 4 | 10 | 3 | 10 | N.A. |
| Dairy | 40 | 95 | 44 | 27 | 31 |
| Sugar | 7 | 22 | 10 | N.A. | N.A. |
| Weighted average, all commodities | 8 | 30 | N.A. | 10 | 9 |

*Results for a 10 percent ad valorem liberalization multiplied by 10.

Sources: Rod Tyers and Kym Anderson, "Liberalizing OECD Agricultural Policies in the Uruguay Round: Effects on Trade and Welfare," *Journal of Agricultural Economics* 30(2) (May 1988), Table 2, p. 205; Organization for Economic Cooperation and Development (OECD), *National Policies and Agricultural Trade* (Paris: May 1987), Table 7, p. 152; Vernon Ronningen, John Sullivan, and John Wainio (USDA), "The Impact of Removal of Support to Agriculture in Developed Countries," paper presented at the American Association of Agricultural Economics annual meeting, Lansing, Mich., August 1987, Table 2, p. 6; K.S. Parikh, G. Fischer, K. Frohberg, and O. Gulbrandsen (IIASA), *Towards Free Trade in Agriculture*, International Institute for Applied Systems Analysis, Laxenburg, Austria, 1986, Table 5.1.

of the four trade models are described according to their projected effects on farm prices, farm incomes, and consumer welfare.

Price effects. Most industrial nation farm policies are designed to support domestic agri-

cultural commodity prices—the prices domestic producers receive and domestic consumers pay—above world market prices. The excess production encouraged by domestic price supports hangs over the world marketplace and depresses the world market price. If domestic price supports were reduced or removed by policy reform, subsidized domestic prices would decline—for both producers and consumers. Smaller domestic production, in turn, would reduce world supplies and allow world market prices to rise. Despite that rise in market prices, most consumers would still pay lower retail prices and farmers would still receive lower prices than before. In brief, policy reform would shrink the policy-induced wedge between domestic prices and world market prices.

Cooperation and Development, *National Policies and Agricultural Trade* (Paris: OECD, May 1987). 3.) Vernon Ronningen, John Sullivan, and John Wainio (USDA), "The Impact of Removal of Support to Agriculture in Developed Countries," (paper presented at the American Agricultural Economics Association annual meeting, Lansing, Mich., August 1987). 4.) K.S. Parikh, G. Fischer, K. Frohberg, and O. Gulbrandsen (IIASA), *Towards Free Trade in Agriculture* (Laxenburg, Austria: International Institute for Applied Systems Analysis, 1986).

TABLE 5

**The effect of multilateral agricultural trade liberalization
on producer prices in key countries**
(percent change, 1995)

| | <u>EC</u> | <u>Japan</u> | <u>United States</u> |
|------------------|-----------|--------------|----------------------|
| Wheat | -52 (-53) | -68 (-74) | -4 (-21) |
| Coarse grains | -41 (-40) | -89 (-89) | 3 (-6) |
| Rice | -47 (-51) | -87 (-88) | -27 (-38) |
| Beef and veal | -49 (-56) | -72 (-80) | 15 (-18) |
| Pork and poultry | -1 (-24) | -43 (-45) | -19 (-2) |
| Dairy | -22 (-36) | -70 (-80) | -16 (-45) |
| Sugar | -60 (-61) | -86 (-88) | -38 (-48) |

Note: Numbers in parentheses indicate price changes resulting from unilateral trade liberalization by that country.
Source: Rod Tyers and Kym Anderson, "Liberalizing OECD Agricultural Policies in the Uruguay Round: Effects on Trade and Welfare," *Journal of Agricultural Economics*, 30(2) (May 1988), Table 4, p. 208.

As expected, each of the four trade models considered indicates that world market prices for farm commodities would generally increase if trade-distorting farm policies were eliminated. The models suggest that world market prices for a representative basket of farm commodities would rise 8 to 30 percent under multilateral agricultural trade liberalization (Table 4). The OECD model, while not providing an average across all food commodities, appears consistent with the conclusion. All four models suggest that market prices would rise most for such heavily subsidized commodities as dairy products. But the models also point to price increases for meat and grain products. The models may overstate world price increases under trade liberalization because none of them takes into account the effects of the 1988 drought in reducing world grain stocks. The recent drawdown in stocks has boosted world market prices and thus reduced the effect of farm subsidies on world markets.

Only the Tyers and Anderson model provides both short-term and long-term food price projections. The OECD, USDA, and IIASA models

provide projections for the mid-1990s. The Tyers and Anderson model results suggest that world market prices will trend higher as time passes under multilateral trade liberalization. The result is consistent with the view that the removal of government supports will induce more producers, especially marginal ones, to cut production over time. The models also suggest that agricultural trade liberalization will lead to bigger farm price changes in Europe and Japan than in the United States. For example, Tyers and Anderson report that producer prices for wheat would fall 52 percent in Europe and 68 percent in Japan, but only 4 percent in the United States (Table 5).

Unilateral elimination of agricultural subsidies by the United States would lead to much bigger price drops for U.S. farmers. The numbers in parentheses in Table 5 indicate changes in domestic producer prices if only the country representing that column removes subsidies. For example, unilateral elimination of U.S. farm subsidies would cause U.S. wheat prices to fall 21 percent, much more than under multilateral action. U.S. farmers, therefore, have a sizable

TABLE 6

The effect of multilateral agricultural trade liberalization on farm and consumer welfare

(change in annual income, billions of dollars*)

| | Tyers and Anderson 1995 | | | USDA | | |
|----------------------------|----------------------------|----------|-------|-------|----------|------|
| | Farm | Consumer | Net | Farm | Consumer | Net |
| U.S. | 3.1 | .0 | 3.1 | -9.9 | 13.8 | 3.9 |
| EC-12 | -73.7 | 91.3 | 17.6 | -15.0 | 24.7 | 9.7 |
| Japan | -38.7 | 58.2 | 19.5 | -14.2 | 19.5 | 5.3 |
| Canada | -0.6 | 1.6 | 1.0 | -1.0 | 1.8 | 0.8 |
| All industrial countries | -122.9 | 173.8 | 50.9 | — | — | — |
| All developing countries** | 50.4 | -63.9 | -13.5 | 11.7 | -12.6 | -0.9 |
| Global total | -59.0 | 98.2 | 39.2 | -24.1 | 44.6 | 20.5 |

*Tyers and Anderson estimates are in 1985 dollars. USDA estimates are in nominal dollars.
 **USDA estimates are for "rest of world," which is essentially the less developed countries.
 Source: Rod Tyers and Kym Anderson, "Liberalizing OECD Agricultural Policies in the Uruguay Round: Effects on Trade and Welfare," *Journal of Agricultural Economics*, 30(2) (May 1988), Table 6, p. 211; USDA, Tables 4-5, pp. 11-12.

advantage in multilateral liberalization compared with unilateral action. Recognizing that advantage, former U.S. Trade Representative Clayton Yeutter has stated repeatedly that the United States will not unilaterally eliminate its farm subsidies.

Farm effects. Trade liberalization models measure effects on the welfare of farmers and consumers by calculating changes in farm incomes and consumer food and tax expenditures. Such measures are valuable in indicating the direction and relative magnitude of effects across countries. The absolute value of the estimated effects, on the other hand, is questionable because of the imprecise nature of the models.

The likely effects of policy reform on farm incomes are far from uniform across the industrial countries considered in these models. The models agree, however, that farm income losses under policy liberalization would be greater in Europe

and Japan than in the United States (Table 6). According to the USDA model, trade liberalization would mean annual income losses of roughly \$15 billion for European and Japanese farmers and losses of only \$10 billion for U.S. farmers. The Tyers and Anderson model projects annual income losses under multilateral trade liberalization for European and Japanese farmers totaling \$112 billion by 1995 compared with an annual gain of \$3 billion for U.S. farmers.¹⁸ These projected farm income effects are generally consistent with the preceding summary of price effects, which indicates policy-induced price distortions

¹⁸ In discussing farmer and consumer welfare, analysis is confined to the USDA and Tyers and Anderson models. The remaining models do not present results on welfare effects.

are much greater in Europe and Japan than in the United States. Since the policy-induced wedge between domestic prices and world market prices is smaller in the United States, removal of the wedge would be expected to have smaller income effects for U.S. farmers.

Although the models agree that the adverse effects of farm and trade policy reform on farm incomes would be greater in Europe and Japan than in the United States, the disparity between the USDA and Tyers and Anderson projections for U.S. farm incomes is not readily explained. Highly subsidized, high-cost producers are likely to suffer greater income losses under farm policy reform than less subsidized, lower cost producers. Farm subsidies in the United States are smaller than in Europe and Japan but greater than in Australia and other Cairns Group countries. Studies that examine the long-term competitiveness of U.S. agriculture suggest that productive soils, favorable climate, well-developed technology, and an efficient marketing infrastructure hold down U.S. production costs and make the United States a strong competitor in world food markets.¹⁹ But the United States is not the world's least cost producer. On balance, the intermediate position of farm subsidy levels and production costs in the United States blurs projections of U.S. farm incomes under world-wide policy reform. But regardless of whether U.S. farm incomes rise or fall with policy liberalization, the change is

¹⁹ Several aspects of the competitive posture of U.S. agriculture are examined in: Gerald F. Ortman, Valter J. Stulp, and Norman Rask, "Comparative Costs of Agricultural Commodities Among Major Exporting Countries" (Working Paper ESO 1325, Department of Agricultural Economics and Rural Sociology, The Ohio State University, Columbus, Ohio, 1986); Alan Barkema and Mark Drabenstott, "Can U.S. and Great Plains Agriculture Compete in the World Market?" Federal Reserve Bank of Kansas City, *Economic Review* (February 1988), pp. 3-17; and Council for Agricultural Science and Technology, "Long-Term Viability of U.S. Agriculture," Report No. 114 (June 1988).

likely to be relatively small compared with farm income changes in Europe and Japan.

Agricultural trade liberalization does bring distinct benefits to farmers in many countries. Both the USDA and Tyers and Anderson models project substantial gains to farm incomes in the developing world and in Australia. Farmers in developing countries benefit under trade liberalization through expanded trade at favorable world market prices. Australia has substantially lower farm subsidies than most industrial nations and stands to gain some world markets as other industrial countries trim their subsidies.²⁰

The effects of trade liberalization on farmers can be better gauged on a per farm basis. The conversion is somewhat difficult since the definition of a farm differs widely across countries.²¹ Nevertheless, the farm income effects from the Tyers and Anderson model suggest that annual per farm losses would be biggest in the European Community at \$11,600, followed by Japan at \$9,000 and Canada at \$2,000.²² The annual gain estimated for U.S. producers by Tyers and Anderson is \$1,300 per farm (the loss estimated

²⁰ For a discussion of Australia's position in world food markets, see Geoff Miller, *The Political Economy of International Agricultural Policy Reform* (Canberra: Department of Primary Industry, 1987).

²¹ For purposes of calculation, the total number of full-time and part-time farms has been used. The number of farms used for each country is as follows: United States, 2.2 million; European Community, 6.4 million; Canada, 293,000; Japan, 4.3 million; and Australia, 167,000.

²² The relatively large income losses on each farm in the European Community and Japan under trade liberalization need not increase resistance to trade reform in either region. Under the U.S. proposal for complete trade liberalization, these farm income losses could be offset by direct or decoupled farm income subsidies that cause little distortion in prices, production decisions, and trade patterns. For a more complete description of farm income subsidies and other farm policy tools, see the box at the end of the article.

by the USDA would amount to \$4,300 per farm). Australian farmers gain the most, \$28,700 per farm.

These wide differences in farm income effects resulting from policy reform point to likely shifts in production around the world following trade liberalization. Farm production would likely increase in regions where farm incomes rise under trade liberalization, and conversely, production could be expected to decline in regions where farm incomes fall. Thus, the analysis suggests that with world policy reform, farmers in Australia and several developing countries would likely gain a greater share of world agricultural markets, primarily at the expense of farmers in the European Community and Japan. U.S. farmers would likely maintain their current share of world markets.

Consumer effects. Consumers are the big winners under agricultural trade liberalization. All the models project substantial gains for consumers through lower taxes and lower retail food prices. Consumer gains are substantial in all the developed countries, but are especially pronounced in Japan and Europe. Even though world market prices increase under trade liberalization, retail food prices in Europe and Japan would still fall sharply from current policy-distorted levels. The two models differ on whether European or Japanese consumers, in aggregate, gain most from trade liberalization, but the combined gains are estimated at \$45 to \$150 billion (Table 6). Gains for U.S. consumers are much smaller.

Disaggregating these estimates to individual households places the benefits in a more tangible perspective. Tyers and Anderson estimate that by 1995 trade liberalization would increase the annual income of each nonfarm household by \$1,440 (1985 dollars) in Europe and \$2,280 in Japan. U.S. households would gain only about \$400 a year.

Net welfare effects. What is the net effect of agricultural trade liberalization? The net benefits

listed in Table 6 suggest that farmers could be fully compensated for their losses and consumers would still be better off. That conclusion holds for the world as a whole and for all industrial nations.

The biggest net gains are in Europe and Japan, with the United States a distant third. Lower grocery prices and taxes in Europe and Japan generate enormous benefits that more than offset the notable losses to farmers in those regions. The gains in the United States are more modest, where both farmers and consumers appear likely to make marginal gains.

Only developing countries prove to be net losers from trade liberalization. Consumers in those countries would be forced to pay market food prices instead of the artificially low prices created by government policy. Even so, some might argue that the gains to developing country farmers would redress long-standing social and political concerns about the rural poor in the developing world. In short, reduced rural poverty would offer some political and social benefits that would make multilateral agricultural trade liberalization more attractive in the developing world than a simple comparison of consumer losses and producer gains might at first suggest.

Other benefits. Many benefits that are expected to accrue to national farm policy reform defy measurement and are not explicitly revealed in the results of trade liberalization models. For example, in the absence of policy distortions farm price variability would likely be dampened by the increased flexibility of producer and consumer responses to sudden shifts in supply. Farm policy reform could also provide environmental benefits by removing incentives for farming fragile lands and for excessive use of agricultural chemicals. And the elimination of policy distortions could free excess capital invested in agricultural production to flow into more productive uses in other sectors of the economy. Although these benefits of policy reform are important, most attention in

the GATT negotiations is focused on the more readily measured effects of national farm policies.

Summary

Current agricultural policies around the world distort world prices, advantage farmers, and disadvantage consumers. The farm benefits and consumer costs are not evenly distributed in the world. Japanese and European farmers are major benefactors, while consumers in those countries pay substantially higher food costs and taxes than they otherwise would.

The multilateral elimination of farm subsidies in industrial countries offers significant net benefits to all industrial nations. Models of world food trade indicate that if farm policies could be eliminated, consumers would be better off in every major industrial nation—even if they were required to directly compensate farmers for income lost due to policy reform. Current farm programs, therefore, not only distort prices and transfer income from consumers to farmers, but also exact a dead weight loss on the U.S. and world economies. Quite simply, trade-distorting farm programs are expensive to administer, and they create inefficiencies in the world food market.

These conclusions drawn from existing economic models provide a framework for evaluating the implications of the three proposals for agriculture in the Uruguay Round. The estimated benefits of complete liberalization recommend the U.S. proposal. Eliminating farm subsidies would benefit U.S. consumers and probably benefit U.S. producers, although the models disagree on the latter conclusion.

The critical questions about complete elimination of trade-distorting farm subsidies relate to smoothing the transition. How much and in what ways should farmers be compensated? Will some farm regions within countries be adversely affected, and should they be compensated? Will

rural towns be adversely affected, and should they be compensated? The U.S. proposal does provide at least a partial answer to all three questions. Under the U.S. proposal, groups that lose income could be compensated in accordance with prevailing social goals, provided the compensation is in a form that does not affect production decisions. Compensation provided as direct farm income subsidies that are decoupled from output prices would be allowed under the U.S. proposal. The ability of the United States, the European Community, and others to agree on the use of decoupled payments or to find other answers to these questions will probably determine the fate of the U.S. proposal.

The Cairns proposal, when viewed against the trade liberalization analysis, offers fewer benefits and fewer negative effects for producers. The U.S. and world economies might achieve half the net benefits of total trade liberalization while farm incomes would be higher. Such results may prove politically attractive since they would enable governments to make consumers better off while undertaking moderate steps to compensate producers.

The EC proposal has little to recommend it when weighed against the trade liberalization analysis. A continuation of current subsidies will keep world farm prices distorted, food prices high in many industrial countries, and global food production less efficient. It will also keep farm incomes high, especially in the European Community and Japan. But such an objective must be justified on social, not economic grounds. The current impasse in the Uruguay Round suggests that disentangling social and economic objectives is not an easy task.

Conclusions

The GATT's long neglect of the trade effects of national farm policies—the policies that are most responsible for current distortions in world

food markets—has severely limited its success in liberalizing agricultural trade. Rapid expansion in world food demand concealed policy-induced distortions in agricultural trade during the 1970s. But a new agricultural trade crisis emerged when growth in world food trade slowed abruptly in the early 1980s. In brief, a half decade of burgeoning agricultural surpluses, soaring national farm program costs, and rising trade frictions have brought national farm policies to the center of the bargaining table after 40 years of neglect.

Although the major participants in the Uruguay Round readily acknowledge the current crisis in agricultural trade, they disagree sharply on how to resolve agricultural trade problems. The major stumbling block to progress in the Uruguay Round—as has been the case throughout the GATT's history—is disagreement on how the GATT should address national farm policies. The U.S. proposal to eliminate all direct and indirect policy-induced trade distortions effectively subordinates national farm programs to the GATT accords. The Cairns Group generally concurs with the U.S. proposal. But the European Community steadfastly maintains the primacy of its Common Agricultural Policy to international trading rules. Thus, the fundamental issue that

has rendered previous GATT accords ineffective threatens the success of the Uruguay Round.

Economic analysis favors the liberalized trading environment advocated by the United States and the Cairns Group. Aggregate benefits accruing to consumers under trade liberalization—in the form of lower retail food prices and smaller tax burdens—would generally outweigh aggregate income lost by producers. Conversely, under the EC proposal aggregate losses accruing to consumers—in the form of continued high food costs and heavy tax burdens—generally outweigh aggregate benefits received by producers. But these aggregate results conceal the distribution of gains and losses among consumers and producers in different regions. Disaggregated results show EC farmers would likely lose the most under trade liberalization and EC consumers would likely gain the most.

After 40 years of neglect, agriculture's time has come in the GATT. Never before has the opportunity for liberalizing agricultural trade been greater. But success will not come easily. Countries must be willing to disentangle economic, social, and political objectives for agriculture. Impasse in Montreal and a 40-year legacy of failure both suggest that future negotiations will remain difficult.

The importance of national farm policies in the Uruguay Round

A surge in national farm program costs and a history of incomplete success at previous GATT rounds suggest that the ultimate success of the Uruguay Round will likely depend on the willingness of the participants to negotiate substantive changes in national farm policies. But to successfully negotiate an orderly reduction in the trade-distorting effects of national farm policies, the effects of farm programs on world markets must first be measured. The measurement of the combined effects of numerous farm policy tools, however, is extremely difficult.

The effects that several different types of national farm policies can have on world trade patterns are described here. Several farm policy tools currently used in Japan, the European Community, and the United States—major players in the Uruguay Round—are used as examples to illustrate the linkages from national farm policies to international trade distortions. The discussion concludes with an introduction to three of the gauges that have been devised to measure the combined effects of a wide range of dissimilar policy tools.

National farm policies and international trade

The Japanese beef import quota is a prime example of a national farm policy tool that directly affects trade. By limiting beef imports to a predetermined quantity, domestic Japanese beef prices are maintained well above world price levels. Supplies of foreign-produced beef that would otherwise enter the Japanese market instead hang over the world market, driving down prices for foreign beef producers. The Japanese quota has long been a complaint of

U.S. cattle feeders. Japanese consumers, who pay much higher prices for a smaller quantity of beef than they would in the absence of the quota, absorb the burden of national farm income support. Government budget costs resulting from the quota scheme are small. In summary, the import quota directly reduces the volume of trade, lowers prices for foreign producers, boosts prices for Japanese producers and consumers, and effectively shifts the burden of Japanese farm income support from taxpayers to consumers.

Other policies that do not directly target trade—large portions of the complex programs affecting grain production in the European Community and in the United States, for example—can also have significant effects on world markets. Major parts of the U.S. Food Security Act of 1985 (FSA) and the EC Common Agricultural Policy (CAP) guarantee prices to domestic grain producers that are well above world market prices. In response to the artificially elevated prices, farmers in both regions produce more than they otherwise would, causing exportable supplies to grow. The larger supplies available to the world market weigh down the price received by foreign suppliers, a clear trade effect. Under the two-price schemes of the FSA and the CAP, domestic producers who receive prices pushed up by government support benefit at the expense of taxpayers who finance large farm program outlays. Domestic grain prices—if not supported by other policy tools—are likely to fall under the burden of large grain inventories. But any decline in food prices is generally not sufficient to fully compensate for the higher taxes needed to fund the programs.

Additional policy tools accompany the general two-price scheme employed in the FSA and the CAP. The wedge between domestic prices and world market prices is widened by export subsidies and import restrictions, both of which further depress world market prices. The price wedge is widened further by FSA and CAP policies that provide for government purchases of excess domestic grain stocks for subsequent subsidized sales abroad. But the price wedge is shrunk by land-idling requirements that limit domestic production and support domestic and world prices. Thus, the trade-distorting effects of the FSA were partially offset by provisions that held out of production nearly a fourth of U.S. cropland in 1988.

In summary, a plethora of farm policy tools is responsible for distortions in the world food market. These tools range from border-effect policies, which directly target trade, to income-support policies that more indirectly affect trade. Despite the growing realization that reform of the entire range of farm policy tools must be a fundamental part of any effective package of trade policy liberalization, bringing national farm programs under the auspices of the GATT presents negotiators with a practical problem. How can the effects of farm policies on trade be measured? Measurement of the effects of farm policies is a prerequisite to a negotiated reduction of distortions in agricultural markets, but the complexity of farm programs worldwide makes the measurement extremely difficult.

Measuring the effects of national farm policies

Despite the tangle of policies affecting farm trade, several measures of the effects of farm policies on agricultural trade have been

developed. Three of the most common measures are described here. They are the Nominal Rate of Protection (NRP), the Producer Subsidy Equivalent (PSE), and the consumer analog of the PSE, the Consumer Subsidy Equivalent (CSE).¹

The NRP measures the gap opened by government farm and trade policies between the domestic price that producers receive and the world market price. For example, if the only policy tool in use were an import tariff assessed at the border, the NRP would be equal to the amount of the tariff. The NRP's greatest advantages are its simple definition and limited data requirements. But because the NRP focuses entirely on output prices, it fails to capture the effects of policy tools that have little or no impact on farm output prices. For example, the NRP would fail to capture the full effects of policies that subsidize purchases of farm inputs, that boost farm incomes with "decoupled" payments, that sponsor research and development activities, or that subsidize land improvement or reclamation projects.

The PSE and the CSE are more broadly defined measures of government intervention in agriculture than the NRP. In contrast to the NRP, which focuses entirely on the effects of agricultural policies on prices, the PSE and the CSE focus on the effects of policies on incomes.

¹ For a more detailed description of the NRP, PSE, CSE, and other measures of government intervention in agricultural markets see: Tim Josling and Stefan Tangerman, "Measuring Levels of Protection in Agriculture: A Survey of Approaches and Results" (invited paper presented at the XX International Association of Agricultural Economists, Buenos Aires, August 1988); and Nancy Schwartz and Stephan Parker, "Measuring Government Intervention in Agriculture for the GATT Negotiations" (invited paper presented at the American Agricultural Economics Association annual meeting, Knoxville, August 1988).

The PSE, usually stated per unit of production of an individual commodity, is the amount of compensation producers would have to receive to maintain their incomes at current levels if all farm policies were eliminated. Broadly defined, the PSE captures the total increment to farm incomes arising from all government policies, including policies that have specific price effects like tariffs and other border effects, commodity price supports, and input price subsidies. The PSE also reflects policies that have more ambiguous effects on farm output prices, like decoupled income supports, government-sponsored research and development programs, extension programs, subsidized land reclamation and improvement projects, and concessionary finance. Similarly, the CSE measures income lost by consumers in payment of the higher food prices and taxes required to maintain farm incomes under current farm policies. Of the three measures described here, the PSE has received the most attention following the U.S. suggestion in the Uruguay Round that the PSE be used as the primary yardstick of government intervention in agricultural markets.

A major limitation of the NRP, the PSE, and the CSE is reliance on the “small-country

assumption” in using the existing world market price as a benchmark in calculating these measures. Under the small-country assumption, the size of an individual country’s agricultural sector relative to the rest of the world is assumed to be so small that the country’s policies have no effect on world prices. This assumption is clearly subject to question for several of the countries—especially Japan, the European Community, and the United States—which have both large agricultural sectors and extensive government involvement in agriculture. Where the application of the small-country assumption appears especially egregious, world trade models that account for policy-induced, world-price effects can be employed. Results from several models of that type are described in this article.

In summary, the NRP, the PSE, and the CSE are not flawless measures of trade distortions. But each measure could serve as a useful gauge of progress in a concerted worldwide effort to reduce agricultural trade distortions caused by national farm policies. Still, no measure is likely to aid progress in the Uruguay Round in the absence of the political resolve to reduce government intervention in agricultural markets.