Implications of a GATT Agreement for World Commodity Markets, 1991-2000

Scenario B:
Moderate Support Reductions of 50-33-33
with Quantity Disciplines
on Export Subsidies

GATT Research Paper 91-GATT 4
January 1992

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This material is based upon work supported by the Cooperative State Research Service, U.S. Department of Agriculture, under Agreement No. 89-38812-4480.

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ABSTRACT

A dynamic multicountry, multicommodity model is used to evaluate the impact of a moderate General Agreement on Tariffs and Trade (GATT) agreement. The terms of this agreement are as follows.

1. Export subsidy quantities (using annual quantities and price wedges) are reduced by 50 percent from the 1986-88 average by 1996.
2. Import restrictions are tariffied and reduced by 33 percent from the 1986-88 average by 1996 (tariffs are measured by using an annual price wedge approach).
3. Internal supports, as measured by the aggregate measure of support (AMS) are reduced by 33 percent from the 1986-88 average by 1996 (fixed reference prices are used).

The results indicate that U.S. producers would benefit substantially from the agreement because the United States has made or will have made many of the cuts required by this moderate agreement. The results also indicate that the use of quantity in lieu of expenditure restrictions results in more liberalized world markets because the price signals required to reduce export quantities can force internal prices to equal those in world markets.

SCENARIO B: MODERATE SUPPORT REDUCTIONS OF 50-33-33 WITH QUANTITY DISCIPLINES ON EXPORT SUBSIDIES

Introduction

This report examines the possible effects on agriculture of a General Agreement on Tariffs and Trade (GATT) agreement under which member countries would make specific commitments to reduce protection and subsidies in the areas of export competition, border measures, and internal supports for major crop, livestock, and dairy products. The analysis compares the outlook for the 1991-2000 period under the following scenarios:

1. A baseline scenario that continues current agricultural policies in major trading countries
2. An alternative (i.e., GATT) scenario that requires GATT member countries to implement the following changes by 1996:
    a. Reduce the quantity exported under subsidy by 50 percent from the 1986-88 average
    b. Convert import restrictions to tariffs and reduce the tariffs by 33 percent of the 1986-88 average tariff equivalent
    c. Reduce internal supports, as measured by an aggregate measure of support (AMS), by 33 percent from the 1986-88 average. The AMS is calculated by multiplying the difference between the internal support prices and a world reference price by the level of production eligible for support and adding any other direct producer payments

The analysis was conducted by utilizing the agricultural commodity models of the Food and Agricultural Policy Research Institute (FAPRI) and additional models created at the Center for Agricultural and Rural Development (CARD) specifically for this analysis. The baseline was

prepared in July 1990, based on the best information available at that time. Thus, neither the baseline nor the GATT scenario incorporates unexpected events that have occurred since July 1990.

This report is directly comparable with GATT Research Paper 91-GATT 1, "Implications of a GATT Agreement for World Commodity Markets, 1991-2000. Scenario A: Moderate Support Reductions of 50-33-33 with Expenditure Disciplines on Export Subsidies." The major difference between the two papers is how export subsidy restrictions are handled.

The results presented in this report must be interpreted with care. They represent estimates of the consequences of a specific GATT agreement, based on a set of assumptions about how the rules established by the agreement might be put into practice. The actual agreement and implementing rules will differ from those assumed here. In addition, the indicated impacts of a GATT agreement on agricultural markets are contingent on the baseline. Different baseline assumptions about such factors as exchange rates, agricultural policies, and technological change would affect not only the magnitudes of the measured effects, but in some cases could affect the determination of who "wins" and who "loses."

The Analytical System

FAPRI maintains a set of econometric models of world commodity markets. For major trading countries, the FAPRI models estimate the supply, utilization, net trade, and prices of wheat, feed grains, rice, and soybeans. For the United States, the FAPRI models also include the cotton, sugar, beef, pork, poultry, and dairy markets and provide estimates of government farm program costs and farm income. CARD Technical Report 89-TR 13 provides a summary documentation of the FAPRI modeling system at CARD (Devadoss et al. 1989).

For purposes of this analysis, it was necessary to develop models of the world beef, pork, poultry, dairy, and sugar markets. Econometric models of the beef, pork, and poultry sectors in the European Community and Japan were estimated. A synthetic model of the Canadian livestock sector

was built, based on the elasticities inherent in the Food and Agricultural Regional Model (FARM) maintained by Agriculture Canada. Synthetic models were developed for other major livestock-producing and -consuming countries and for world dairy and sugar markets. Elasticities for these models were taken from other studies, where appropriate, or based on the best judgment of CARD analysts.

All the components of the modeling system used in this analysis are dynamic, meaning that both short- and long-term effects of policy changes can be identified. The models are calibrated to reproduce recent historical data as closely as possible and to generate projections for the next ten years that are plausible, given what we know about the forces likely to shape world agricultural markets in the years ahead.

The fact that the models operate in "real time" is very important to this analysis. The obligations of different parties under the GATT scenario are stated in terms of subsidy reductions from the levels that prevailed during the 1986-88 period. Policies and world market conditions have already changed considerably since that period for many products in many countries, and further changes are anticipated, even in the absence of a GATT agreement. These changes in policies and market conditions are typically overlooked in other analyses that are based on comparative static models.

The Baseline Scenario

FAPRI baseline projections are grounded on a series of assumptions about the general economy, agricultural policies, the weather, and technological change. Macroeconomic assumptions are based on forecasts prepared by The WEFA Group and Project LINK. We have assumed that 1990 agricultural policies will be continued in the United States and other trading nations. Average weather conditions and historical rates of technological change are assumed to prevail during the projection period.

Important assumptions of the July 1990 FAPRI baseline are summarized in Table 1. Averages for the 1986-88 period are presented because those years serve as a reference period for determining the obligations of different countries under the GATT scenario.

Macroeconomic Assumptions

- Steady economic growth and moderate inflation are assumed for the developed market economies in the 1990s. Slow economic growth is assumed for the USSR and Eastern Europe. The picture for developing countries is mixed, with the most rapid growth in the newly industrialized countries of the Pacific Rim.
- The value of the U.S. dollar already has fallen sharply from the 1986-88 average level. Further depreciation of the U.S. dollar against European currencies and the Japanese yen (but not the Canadian dollar) is assumed for the decade ahead.

Agricultural Policies

- Agricultural policy prices generally are assumed to remain constant in nominal terms at current levels. For example, U.S. target prices, EC intervention prices, and Japanese grain purchase prices are held at 1990 levels through the year 2000. Even with modest rates of inflation, this assumption implies significant reductions in real support prices.
- Exceptions to the general rule occur because existing policy rules are assumed to continue to set support levels. For example, Japanese beef prices are determined by world beef prices and the effects of the existing liberalization agreement. Japanese milk prices and Canadian butter support prices increase in nominal terms because of inflation adjustments consistent with current policy.

Baseline Projections

- Baseline projections for production, utilization, prices, and trade of major commodities are reported with the results of the analysis, as are the differences between the GATT and baseline

Table 1. Baseline macroeconomic and policy assumptions

	1986-88 Average	1991	1992	1993	1994	1995	1996	1997-2000 Average
Real GDP[a] Growth				(Percent Change)				
United States	3.7	2.5	2.5	2.9	2.8	2.9	2.9	2.9
European Community	3.1	3.0	2.9	3.3	3.4	3.3	3.3	3.3
Japan	4.1	4.0	4.4	4.1	4.7	4.5	4.4	4.4
Canada	4.2	1.0	2.2	2.3	2.4	2.5	2.4	2.4
Inflation Rate (GDP Defl.)				(Percent Change)				
United States	3.0	4.2	4.3	3.9	4.5	4.6	4.3	4.3
European Community	4.2	5.0	4.2	4.1	3.9	4.2	4.1	4.1
Japan	0.7	1.7	1.4	1.6	0.7	0.8	1.0	1.0
Canada	3.6	3.7	2.4	3.5	3.4	4.4	3.8	3.8
Exchange Rate				(Local Currency per U.S. Dollar)				
European Community	0.91	0.79	0.77	0.75	0.73	0.72	0.70	0.66
Japan	146.6	136.8	127.6	120.1	114.3	108.2	102.5	89.6
Canada	1.32	1.20	1.22	1.23	1.25	1.28	1.30	1.35
U.S. Policy Prices				(U.S. Dollars per Bushel)				
Wheat Target	4.33	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Corn Target	3.00	2.75	2.75	2.75	2.75	2.75	2.75	2.75
				(U.S. Dollars per Hundredweight)				
Rice Target	11.57	10.71	10.71	10.71	10.71	10.71	10.71	10.71
Butter CCC[b]	136.50	89.19	84.36	84.36	84.36	84.36	84.36	84.36
Cheese CCC	120.71	106.45	106.57	106.57	106.57	106.57	106.57	106.57
EC Policy Prices				(ECUs per Metric Ton)				
Wheat Intervention	179	169	169	169	169	169	169	169
Barley Intervention	173	160	160	160	160	160	160	160
Soybean Minimum	495	489	489	489	489	489	489	489
Butter Intervention	3,132	2,933	2,933	2,933	2,933	2,933	2,933	2,933
Cheese Threshold	3,554	3,447	3,447	3,447	3,447	3,447	3,447	3,447
EC Policy-Determined Prices				(ECUs per Metric Ton)				
Beef Wholesale	2,885	3,015	3,015	3,015	3,015	3,015	3,015	3,015
Pork Wholesale	1,483	1,416	1,416	1,416	1,416	1,416	1,416	1,416
Poultry Wholesale	1,437	1,407	1,407	1,407	1,407	1,407	1,407	1,407
Japanese Policy Prices				(Yen per Kilogram)				
Rice Purchase	298.8	292.6	292.6	292.6	292.6	292.6	292.6	292.6
Wheat Purchase	181.2	180.4	180.4	180.4	180.4	180.4	180.4	180.4
Barley Purchase	163.2	162.5	162.5	162.5	162.5	162.5	162.5	162.5
Japanese Policy-Det. Prices				(Yen per Kilogram)				
Beef Wholesale	1,182.3	699.2	685.2	602.8	504.2	483.5	463.5	428.5
Milk Farm	920.1	921.4	929.3	945.0	952.9	960.8	971.4	998.4
Canadian Policy Price				(Canadian Dollars per Metric Ton)				
Butter Support	5,037	5,230	5,350	5,460	5,600	5,730	5,862	6,207

[a]GDP = gross domestic product.
[b]CCC = Commodity Credit Corporation.

scenarios. Estimates are reported for 1991 and 1996, along with an average for the 1997-2000 period.

- For most commodities, projected world prices measured in U.S. dollars decrease in 1991 from the 1988-90 period. Nominal prices of grains, oilseeds, and dairy products generally increase thereafter, but at rates less than that of inflation. Livestock prices vary cyclically.
- World grain trade expands in the 1990s, with developing countries accounting for most of the growth in import demand and the United States, the European Community, and Canada accounting for most of the increase in export supply.
- Japan significantly increases its beef imports, and the European Community becomes a net importer of beef. As a result, the United States becomes a net exporter of beef by the late 1990s.
- The EC dairy quota limits dairy product exports in the face of increasing demand from Japan and other countries. As a result, the United States becomes a commercial net exporter of dairy products by the late 1990s.

Uncertainties, Risks, and Qualifications

- In the econometric model of the grains sector, we include a separate technological term in estimating yields, which means that yields continue to increase in our simulation, even though prices fall.
- We do not incorporate a risk effect in any of our supply equations. Any movements toward liberalization would almost certainly involve more price risk in the European Community and Japan. To the extent that output falls in response, we will underestimate the true output response. However, world price variability will be less, which should increase output in Argentina, Australia, and the United States.
- All these uncertainties serve to emphasize the need to treat the estimated results with caution. A different set of baseline assumptions would change the magnitude and, in some cases, even the

direction of estimated impacts resulting from the assumed GATT agreement in the GATT scenario.

The GATT Scenario

General Assumptions

- By 1996, the quantity that can be exported with export subsidies is reduced by 50 percent from the 1986-88 average.
- Import restrictions are converted to tariffs. By 1996, these tariffs are reduced by 33 percent from the 1986-88 average tariff equivalent.
- Internal supports, as measured by an AMS using fixed reference prices, are reduced by 33 percent from the 1986-88 average by 1996.

Export Competition

- The average amount exported with export subsidies is computed for the 1986-88 period. Any policy that drives a wedge between world and internal market prices is defined to be an export subsidy. Deficiency payments are not considered export subsidies.
- The quantity exported with export subsidies is reduced in 1992 by 10 percent from the 1986-88 average level, in 1993 by 20 percent, in 1994 by 30 percent, in 1995 by 40 percent, and in 1996 and all subsequent years by 50 percent.
- Additional exports are permitted, but the products must be sold without export subsidies. Thus, the internal market price must equal the world price adjusted for transportation costs if the country wishes to export more than the amount that can be sold with export subsidies.

Import Access

- Average tariffs or tariff equivalents are computed for the 1986-88 period by comparing internal and world prices for imported commodities.

- Nontariff barriers are converted to tariffs in 1992.
- Tariffs are reduced in 1992 by 6.6 percent from the 1986-88 level, in 1993 by 13.2 percent, in 1994 by 19.8 percent, in 1995 by 26.4 percent, and in 1996 and all subsequent years by 33 percent.
- In no case can the tariff exceed the tariff or tariff equivalent in the baseline. This constraint is binding for some countries and come commodities.

Internal Support

- An AMS is calculated for the 1986-88 period by multiplying the difference between internal support prices and reference prices by the level of production eligible for support and adding any other direct producer payments. Support caused by border measures is excluded from the AMS calculation. The reference price is the 1986-88 average world price, converted to local currency.
- The AMS is reduced in 1992 by 6.6 percent from the 1986-88 level, in 1993 by 13.2 percent, in 1994 by 19.8 percent, in 1995 by 26.4 percent, and in 1996 and all subsequent years by 33 percent. The reference price is always the 1986-88 average world price, converted to local currency.
- In no case can the support price exceed the baseline level. This constraint is binding for some countries and some commodities.
- If obligations under export competition or import access require that internal prices fall below the support price calculated under the internal support rules, the support price is reduced to the permitted internal price. An exception is made for existing programs that make deficiency payments equal to the difference between support and market prices.

Qualifications and Comments

- In most cases, transportation costs that cause differences between "world" prices and border prices in particular countries are ignored. For example, the FOB price of corn at the U.S. Gulf is assumed to be the relevant border price for all countries when calculating export subsidies and internal supports (the CIF Rotterdam price is used to calculate tariff equivalents for the European Community). Transportation costs are explicitly considered for livestock products.
- Except in the case of policies that make direct payments to farmers (e.g., U.S. deficiency payments), the internal support rule generally does not directly affect producer returns. Export subsidies and import tariffs are rarely tied explicitly to support prices, and these border measures determine the difference between world and internal market prices.
- Reducing quantities exported with subsidy by 50 percent is very different from reducing export subsidy expenditures or per-unit subsidies by 50 percent. In some cases, the quantity rule requires countries either to reduce exported quantities by 50 percent or to reduce internal prices to world levels.

"Credits" for Policy and World Price Changes

- In the scenario, import tariffs are met by reducing the difference between world and internal prices from the average difference in the 1986-88 period. Credit toward meeting those obligations can be earned by reducing internal prices if world market prices are constant, or by holding internal prices constant if world market prices are increasing.
- Credit toward export subsidy obligations can be earned if the quantity exported under subsidy has fallen from the average amount exported for the 1986-88 period.
- Internal support obligations can be met by reducing either support prices or the quantity eligible to receive support. Changes in world prices do not affect internal support obligations because the AMS is based on a fixed reference price.

- Significant changes in policy prices, market prices, and quantities subsidized have occurred since the 1986-88 period. These changes are explicitly reflected in the GATT scenario. The first four columns in Table 2 report the credits earned by countries in 1989, where credits are measured as a percentage of the 1986-88 average (reference) subsidy, tariff, or AMS.
- Projected changes in baseline market prices and policies result in annual changes in computed subsidy levels during the 1991-2000 period. The last four columns in Table 2 report the credits earned by major countries in 1992, given baseline world and internal prices and quantities.
- The increase in world prices for most commodities in 1989, relative to the 1986-88 average, means that most countries have earned substantial credits toward meeting tariff and subsidy reduction requirements.
- Sensitivity of the subsidy measures to changing market conditions is shown by the results for 1992. In the United States, for example, 1992 target prices for wheat, corn, barley, and rice are reduced from 1986-88 average levels by approximately the same percentage. The AMS credits vary greatly across commodities, however, because of changes in set-aside rates and participation rates caused by changes in market conditions.
- The reported credits illustrate the importance of baseline assumptions and projections. Even though the same percentage cuts apply to all countries and all commodities, relative to the 1986-88 base period, the cuts are often very different, relative to the baseline. For most U.S. commodities, sufficient cuts were already incorporated in the baseline, so little or no additional reduction in target prices and other subsidies is required in the GATT scenario. If the baseline scenario had incorporated the subsidy cuts included in the Food, Agriculture, Conservation, and Trade Act of 1990, no U.S. support reductions would be required under the GATT scenario, except for sugar.

Table 2. Credits for policy and world price changes, 1989 and 1992

	1989				1992			
	U.S.	EC	Japan	Canada	U.S.	EC	Japan	Canada
	(Percent)							
Wheat								
Export Competition	66.4	18.1	NA[a]	0	38.5	22.2	NA	0
Import Access	NA	25.9	14.3	NA	NA	10.0	2.8	NA
Internal Support	10.4	-8.1	-1.7	NA	8.5	10.8	0.4	NA
Corn								
Import Access	NA	10.7	NA	NA	NA	3.9	NA	NA
Internal Support	3.8	0.1	NA	NA	12.8	16.7	NA	NA
Barley								
Export Competition	66.4	23.8	NA	0	38.5	2.4	NA	0
Import Access	NA	16.8	7.5	NA	NA	6.5	-1.2	NA
Internal Support	25.8	7.7	-12.4	NA	37.7	20.0	-11.3	NA
Rice								
Import Access	NA	11.3	6.2	NA	NA	-8.6	-1.2	NA
Internal Support	7.1	-2.3	5.9	NA	-1.5	-5.7	5.8	NA
Soybeans								
Internal Support	NA	-33.5	NA	NA	NA	-24.5	NA	NA
Beef								
Export Competition	NA	32.2	NA	NA	NA	-3.5	NA	NA
Pork								
Export Competition	NA	-8.6	NA	NA	NA	-29.2	NA	NA
Import Access	NA	NA	-39.8	NA	NA	NA	-26.7	NA
Poultry								
Export Competition	NA	54.7	NA	NA	NA	-44.4	NA	NA
Import Access	NA	NA	NA	-46.7	NA	NA	NA	0
Butter								
Export Competition	49.7	21.6	NA	NA	93.9	11.6	NA	NA
Import Access	NA	NA	NA	15.0	NA	NA	NA	17.1
Internal Support	5.2	18.3	NA	1.1	60.3	24.0	NA	3.9
Cheese								
Export Competition	NA	22.9	NA	NA	NA	21.0	NA	NA
Import Access	25.2	NA	NA	7.9	68.7	NA	NA	3.7
Internal Support	3.0	-5.6	NA	NA	9.6	-5.3	NA	NA

[a]NA indicates that the rule does not apply.

Note: Credits are measured as a percentage of the 1986-88 average (reference) subsidy or tariff. A positive credit indicates that the measured subsidy or tariff has been reduced from the 1986-88 average. A negative credit indicates an increase in the measured subsidy or tariff. Factors affecting credits include changes in policies, changes in quantities subsidized, and (under export competition and import access) changes in world prices and exchange rates.

Policy Implications of the Baseline and GATT Scenarios

- Table 3 reports policy measures for the 1986-88 period and for 1996 under the baseline and the GATT scenarios. The reference period for determining the obligations of member countries is 1986-88; 1996 is the year by which all subsidy/tariff reductions must be achieved.
- The last four columns of Table 3 show the baseline measure of protection in 1996 and the level that would be necessary to satisfy the GATT scenario rules.
- These calculations of tariffs and subsidies are heavily dependent on the projected exchange rates for 1996. For example, the European currency unit (ECU) per U.S. dollar exchange rate is expected to decrease from 0.91 ECU per U.S. dollar to 0.70 ECU per U.S. dollar. This relative strengthening of the ECU causes EC prices to increase. Because a fixed reference price is used for AMS calculations, these calculations are not influenced by exchange rates.
- Because technological advances are assumed to continue in the grain, pork, and poultry industries, the baseline levels of EC exports in 1996 are greater than 1986-88 average levels for wheat, barley, pork, and poultry.
- In the United States, internal support levels would need to fall for rice, sugar, cheese, and nonfat dry milk to satisfy the GATT scenario rules. For wheat, feed grains, and meats, few (if any) cuts would be required.
- For the European Community, projected quantities of subsidized exports in 1996 exceed 1986-88 average levels for wheat, pork, poultry, and cheese. Thus, the rule requires significant cuts in the quantities subsidized and therefore requires large cuts in EC market prices.
- Per-unit import tariffs for EC beef, corn, rice, sugar, butter, and cheese must also be sharply reduced from baseline levels to be in compliance with rules of the GATT scenario. Basic internal support prices for soybeans must also be dramatically cut. The only major commodity escaping

Table 3. Policy measures of the baseline and GATT scenarios

	1986-88 Average				1996			
	U.S.	EC	Japan	Canada	U.S.	EC	Japan	Canada
				(Local Currency per U.S. Dollar)				
Exchange Rate	1.00	0.91	147	1.32	1.00	0.70	102	1.30
Wheat								
Export Subsidy				(Local Currency per Metric Ton)				
Baseline	16.62	80.18	NA	22.78	10.17	64.81	NA	22.78
GATT					8.31	40.09	NA	11.39
Export Subsidy Expenditure				(Million Local Currency)				
Baseline	596	1,369	NA	431	453	1,433	NA	497
GATT					298	685	NA	215
Import Tariff (or Equivalent)				(Local Currency per Metric Ton)				
Baseline	NA	106.68	47,721	NA	NA	93.47	48,877	NA
GATT					NA	71.48	31,973	NA
Internal Support AMS[b]				(Million Local Currency)				
Baseline	2,708	5,216	150,966	682	1,989	4,929	138,863	0
GATT					1,814	3,495	101,147	0
Corn								
Import Tariff (or Equivalent)				(Local Currency per Metric Ton)				
Baseline	NA	126.71	NA	NA	NA	125.94	NA	NA
GATT					NA	84.89	NA	NA
Internal Support AMS				(Million Local Currency)				
Baseline	5,414	2,198	NA	NA	4,069	1,964	NA	NA
GATT					3,627	1,472	NA	NA
Barley								
Export Subsidy				(Local Currency per Metric Ton)				
Baseline	16.41	84.17	NA	22.78	15.11	88.45	NA	22.78
GATT					8.20	42.08	NA	11.39
Export Subsidy Expenditure				(Million Local Currency)				
Baseline	37	595	NA	103	28	635	NA	104
GATT					19	297	NA	51
Import Tariff (or Equivalent)				(Local Currency per Metric Ton)				
Baseline	NA	121.84	39,329	NA	NA	119.67	42,411	NA
GATT					NA	81.63	26,351	NA
Internal Support AMS				(Million Local Currency)				
Baseline	167	3,444	53,714	76	92	2,878	55,674	0
GATT					92	2,308	35,988	0
Rice								
Import Tariff (or Equivalent)				(Local Currency per Metric Ton)				
Baseline	NA	297.45	262,164	NA	NA	320.45	269,087	NA
GATT					NA	199.29	175,650	NA
Internal Support AMS				(Million Local Currency)				
Baseline	743	88	2,529,806	NA	627	98	2,429,613	NA
GATT					498	59	1,694,970	NA

Table 3. Continued

	1986-88 Average				1996			
	U.S.	EC	Japan	Canada	U.S.	EC	Japan	Canada
Soybeans								
Internal Support AMS				(Million Local Currency)				
Baseline	NA	379	NA	NA	NA	412	NA	NA
GATT					NA	254	NA	NA
Cotton								
Internal Support AMS				(Million Local Currency)				
Baseline	1,328	NA	NA	NA	865	NA	NA	NA
GATT					865	NA	NA	NA
Sugar								
Import Tariff (or Equivalent)				(Local Currency per Metric Ton)				
Baseline	319.23	512.14	NA	NA	211.86	472.77	NA	NA
GATT					211.86	343.13	NA	NA
Internal Support AMS				(Million Local Currency)				
Baseline	3,063	4,361	67,149	NA	3,746	4,576	64,694	NA
GATT					2,052	2,922	44,990	NA
Beef								
Export Subsidy				(Local Currency per Metric Ton)				
Baseline	NA	1,016	NA	NA	NA	1,052	NA	NA
GATT					NA	508	NA	NA
Export Subsidy Expenditure				(Million Local Currency)				
Baseline	NA	954	NA	NA	NA	0	NA	NA
GATT					NA	0	NA	NA
Pork								
Export Subsidy				(Local Currency per Metric Ton)				
Baseline	NA	335	NA	NA	NA	433	NA	NA
GATT					NA	168	NA	NA
Export Subsidy Expenditure				(Million Local Currency)				
Baseline	NA	120	NA	NA	NA	253	NA	NA
GATT					NA	60	NA	NA
Import Tariff (or Equivalent)				(Local Currency per Metric Ton)				
Baseline	NA	NA	118,600	NA	NA	NA	153,351	NA
GATT					NA	NA	79,460	NA
Poultry								
Export Subsidy				(Local Currency per Metric Ton)				
Baseline	NA	168	NA	NA	NA	242	NA	NA
GATT					NA	84	NA	NA
Export Subsidy Expenditure				(Million Local Currency)				
Baseline	NA	118	NA	NA	NA	138	NA	NA
GATT					NA	59	NA	NA
Import Tariff (or Equivalent)				(Local Currency per Metric Ton)				
Baseline	NA	NA	NA	150	NA	NA	NA	60
GATT					NA	NA	NA	60

Table 3. Continued

	1986-88 Average				1996			
	U.S.	EC	Japan	Canada	U.S.	EC	Japan	Canada
Milk								
Import Tariff (or Equivalent)				(Local Currency per Metric Ton)				
Baseline	NA	NA	75,134	NA	NA	NA	74,357	NA
GATT					NA	NA	49,000	NA
Butter								
Export Subsidy				(Local Currency per Metric Ton)				
Baseline	1,953	2,606	NA	NA	41	2,367	NA	NA
GATT					41	1,303	NA	NA
Export Subsidy Expenditure				(Million Local Currency)				
Baseline	56	1,164	NA	NA	1	547	NA	NA
GATT					1	547	NA	NA
Import Tariff (or Equivalent)				(Local Currency per Metric Ton)				
Baseline	NA	NA	NA	4,085	NA	NA	NA	4,106
GATT					NA	NA	NA	2,737
Internal Support AMS				(Million Local Currency)				
Baseline	1,007	4,162	NA	369	408	3,242	NA	374
GATT					408	2,789	NA	247
Cheese								
Export Subsidy				(Local Currency Per Metric Ton)				
Baseline	NA	2,743	NA	NA	NA	2,200	NA	NA
GATT					NA	1,371	NA	NA
Export Subsidy Expenditure				(Million Local Currency)				
Baseline	NA	663	NA	NA	NA	613	NA	NA
GATT					NA	332	NA	NA
Import Tariff (or Equivalent)				(Local Currency per Metric Ton)				
Baseline	1,467	NA	NA	4,696	315	NA	NA	5,451
GATT					315	NA	NA	3,146
Internal Support AMS				(Million Local Currency)				
Baseline	3,353	9,975	NA	NA	3,360	11,242	NA	NA
GATT					2,247	6,683	NA	NA
Nonfat Dry Milk								
Export Subsidy				(Local Currency per Metric Ton)				
Baseline	686	782	NA	1,673	0	225	NA	716
GATT					0	225	NA	716
Export Subsidy Expenditure				(Million Local Currency)				
Baseline	263	251	NA	92	0	68	NA	14
GATT					0	68	NA	14
Internal Support AMS				(Million Local Currency)				
Baseline	317	1,347	NA	174	296	1,141	NA	167
GATT					213	902	NA	116

[a]NA indicates that the rule does not apply.
[b]AMS = aggregate measure of support.

subsidy reductions in the European Community is skim milk powder, for which the world price increases and EC exports decrease from 1986-88 average levels in the baseline.

- Japan is required to make significant cuts in its subsidies/tariffs for rice, wheat, barley, sugar, pork, and milk. As in the European Community, an appreciating currency and no change in internal support prices in Japan means that 1996 subsidies/tariffs in the baseline are comparable to 1986-88 average levels, even though world prices have increased.
- Japan is not required to reduce subsidies in the beef sector, relative to the baseline, because the baseline incorporates the tariffication and tariff reductions to which Japan had agreed prior to the conclusion of the Uruguay Round of the GATT.
- Canada is required to reduce its transportation subsidies for western grains to comply with export subsidy rules. The Special Canadian Grains Program was discontinued in the baseline scenario, and Western Grains Stabilization Act payments are assumed to average zero in the late 1990s.
- The Canadian butter and cheese quotas must be converted to tariffs and then be sharply reduced (no Article 11 exemption is assumed).

Impacts of the GATT Scenario on World Commodity Trade and Prices

Wheat, Feed Grains, and Rice

- Baseline estimates of net exports and world prices are reported in Table 4 for 1991, 1996, and the average of the years 1997-2000. For the GATT scenario, changes from baseline values are reported for 1996 (the year policy changes are fully implemented) and for the 1997-2000 average (to give an estimate of long-term effects). Figures 1 through 9 illustrate annual levels of world prices and net exports in the two scenarios.
- In response to lower EC market prices, farmers in the European Community reduce production of wheat, barley, and corn. The reduction in EC wheat exports under the scenario is 10 times greater than the reduction that occurs when export subsidy expenditures are limited. This level is

Table 4. World wheat, feed-grain, and rice trade under the baseline and GATT scenarios

	1991	1996		1997-2000 Average	
	Baseline Level	Baseline Level	GATT (Change)	Baseline Level	GATT (Change)
Net Wheat Exports		(1,000 Metric Tons)			
United States	39,240	43,940	570	48,420	528
European Community	18,540	19,710	-480	21,370	-623
Japan	-5,490	-6,070	-230	-6,420	-253
Canada	19,100	21,830	-210	23,320	-265
Australia	11,720	13,330	40	14,120	183
Developing	-73,560	-84,980	110	-93,520	203
CPEs[a]	-16,430	-15,770	100	-15,670	60
Rest of World	6,880	8,010	100	8,380	168
Net Feed-Grain Exports		(1,000 Metric Tons)			
United States	63,383	72,165	2,780	81,766	3,436
European Community	1,088	4,333	-3,918	6,056	-4,787
Japan	-21,896	-23,401	-215	-24,278	-216
Canada	4,337	4,471	186	4,184	319
Australia	2,314	2,730	66	2,713	35
Thailand	1,202	1,305	15	1,274	10
Developing	-37,625	-48,610	632	-56,722	788
CPEs[a]	-22,574	-23,615	132	-24,978	95
Rest of World	9,771	10,622	322	9,985	321
Net Rice Exports		(1,000 Metric Tons)			
United States	2,400	2,076	476	1,976	706
European Community	-306	-390	-34	-444	-24
Japan	-11	58	-830	230	-1,229
Thailand	5,541	6,447	82	6,973	90
Pakistan	916	970	62	1,002	119
India	-387	-189	42	-182	73
Indonesia	-97	71	44	-6	57
Rest of World	-8,056	-9,043	158	-9,549	207
World Prices		(U.S. Dollars per Metric Ton)			
Wheat (FOB Gulf)	135.85	159.25	7.77	168.51	6.08
Corn (FOB Gulf)	97.65	107.28	9.33	107.34	8.49
Barley (FOB Pac. NW)	111.90	129.35	7.12	126.41	5.81
Sorghum (FOB Gulf)	95.81	104.19	4.95	102.83	3.22
Rice (FOB Bangkok)	284.62	322.76	28.51	349.54	37.97

[a]CPE = centrally planned economy.

Note: For the baseline scenario columns, positive numbers indicate that the country or group of countries is a net exporter; negative numbers indicate net importers. For the GATT scenario columns, a positive number indicates an increase in exports or a reduction in imports; a negative number indicates a reduction in exports or an increase in imports.

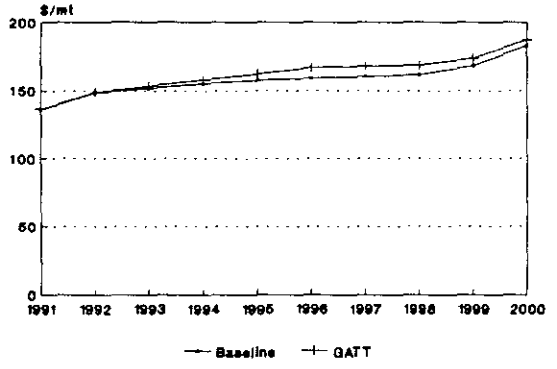

Figure 1. Wheat price under the baseline and GATT scenarios (FOB U.S. Gulf)

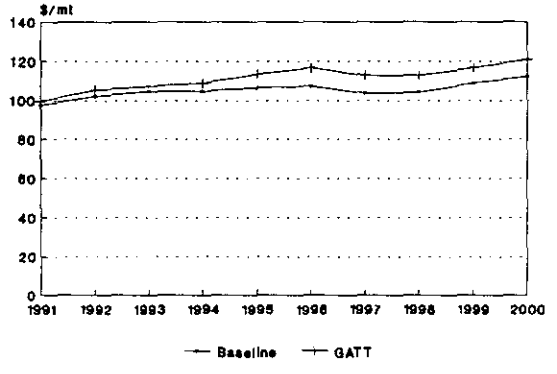

Figure 2. Corn price under the baseline and GATT scenarios (FOB U.S. Gulf)

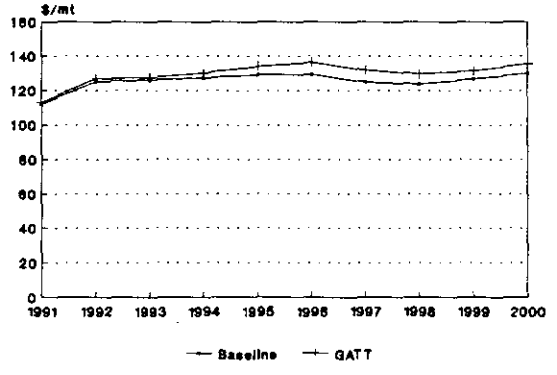

Figure 3. Barley price under the baseline and GATT scenarios (FOB Pacific Northwest)

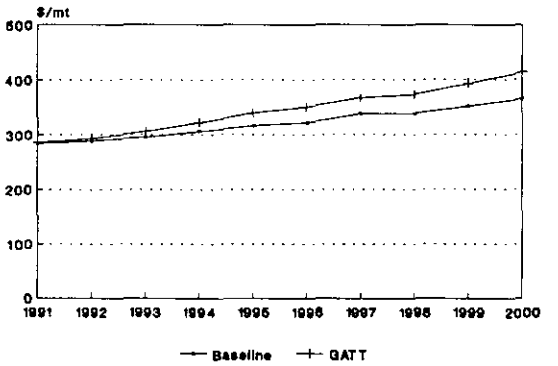

Figure 4. Rice price under the baseline and GATT scenarios (FOB Bangkok)

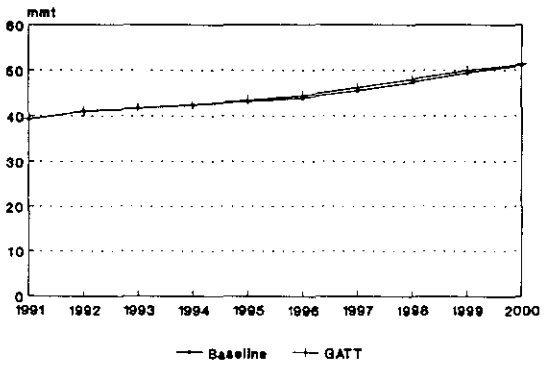

Figure 5. U.S. net wheat exports under the baseline and GATT scenarios

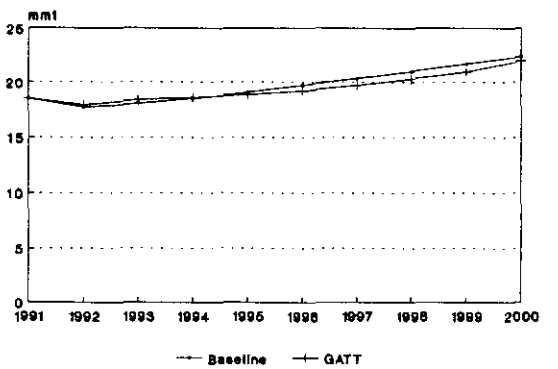

Figure 6. EC net wheat exports under the baseline and GATT scenarios

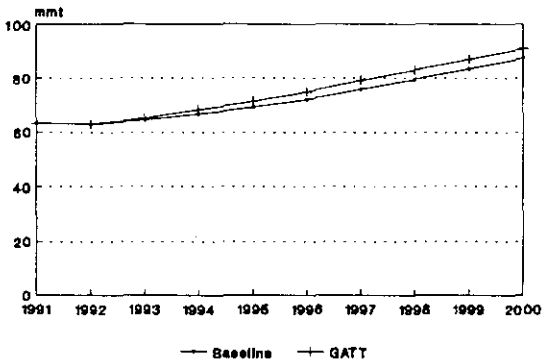

Figure 7. U.S. net feed-grain exports under the baseline and GATT scenarios

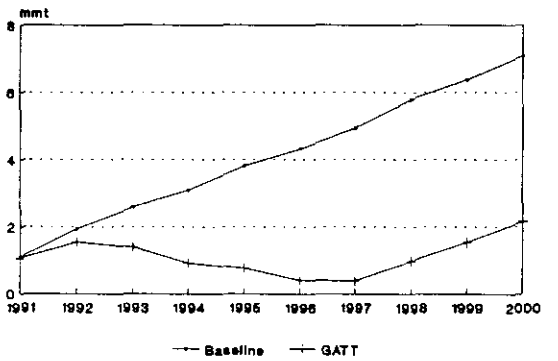

Figure 8. EC net feed-grain exports under the baseline and GATT scenarios

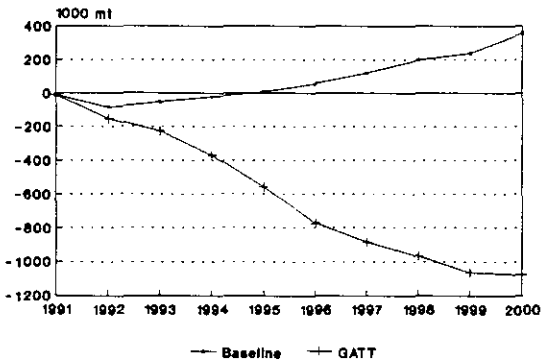

Figure 9. Japanese net rice exports under the baseline and GATT scenarios

attributable to a projected increase in EC wheat exports in the baseline. Under the expenditure limitation, these exports are subsidized at a low per-unit rate (world prices rise and EC prices fall). This tradeoff between quantity and per-unit subsidy is not possible under the quantity restriction. U.S. exports respond strongly to the new opportunities created by this dramatic reduction in EC exports.

- Production of wheat and barley falls sharply in Japan because of lower procurement prices, but the drop in rice production is modest. Consumption increases for all three products are relatively small. Japan imports an additional 220,000 metric tons of wheat, 224,000 metric tons of feed grains, and 844,000 metric tons of rice in 1996. Japan changes from trading almost no rice to becoming a major importer.
- World rice prices rise by about 9 percent in 1996 and by more in later years in response to additional Japanese demand. This price effect would have been even greater had it not triggered a reduction in U.S. acreage reduction rates for rice.
- The decrease in export supplies from the European Community and the increase in import demand from Japan result in higher world prices for all the grains. By 1996, corn prices exceed baseline levels by about 8 percent, barley prices exceed baseline levels by 7 percent, and wheat and sorghum prices exceed baseline levels by 9 percent and 5 percent, respectively. Impacts are slightly less in the late 1990s, after countries have had a chance to adjust to the policy changes.
- In response to world grain prices that are 5 percent to 9 percent higher than baseline levels, the United States and other exporting countries increase production, reduce domestic consumption, and increase exports. In 1996, U.S. feed-grain exports increase by less than 6 percent, wheat exports increase by less than 5 percent, and U.S. rice exports increase by 23 percent.

- The reduction in transportation subsidies limits the benefits of higher world market prices to Canadian producers. Because of changes in relative prices, Canadian net feed-grain and wheat exports increase slightly.
- Australia, Argentina, Thailand, and other grain-exporting countries also benefit from the increase in world prices. Higher world prices reduce net grain imports by countries other than Japan.
- Importing countries that have benefitted from the export subsidies may find that their purchase prices increase by more than the rise in world prices because the subsidy per ton will also be lower in most cases.

Soybeans and Soybean Products

- Soybean sector results are presented in Table 5 and illustrated in Figure 10.
- Increased livestock production in the United States in the GATT scenario results in increased domestic demand for soybean meal. This increased demand and the effects of higher grain prices are the major factors contributing to an increase in world soybean and soybean product prices, relative to the baseline.
- Higher soybean meal prices and reduced EC feed-grain prices result in reduced use of soybean meal in feed rations in the European Community. At the same time, lower EC soybean support prices result in reduced soybean production. The net effect is a 2 percent reduction in EC soybean meal imports and a 1 percent increase in EC soybean imports.
- Argentina and Brazil increase soybean production in response to the increase in world soybean prices. Part of the production increase is exported as soybeans, and part is crushed and exported as soybean meal and soybean oil.
- U.S. soybean exports increase slightly to meet the increased soybean import demand from the European Community. U.S. soybean meal exports decrease because of reduced EC demand and the increase in U.S. domestic demand.

Table 5. World soybean and soybean product trade under the baseline and GATT scenarios

	1991	1996		1997-2000 Average	
	Baseline Level	Baseline Level	GATT (Change)	Baseline Level	GATT (Change)
Net Soybean Exports		(1,000 Metric Tons)			
United States	17,222	20,862	225	23,010	183
European Community	-12,265	-14,264	-359	-15,276	-406
Japan	-4,898	-5,412	61	-5,589	109
Argentina	3,022	3,187	8	3,212	22
Brazil	2,892	3,037	65	2,999	95
Developing	-7,351	-8,956	1	-9,938	7
CPEs[a]	-1,525	-1,789	-4	-1,900	-13
Rest of World	2,903	3,335	3	3,482	4
Net Soybean Meal Exports		(1,000 Metric Tons)			
United States	4,717	6,199	-360	7,115	-447
European Community	-8,012	-9,174	218	-9,662	268
Japan	-533	-785	10	-1,043	9
Argentina	5,890	6,751	16	7,130	21
Brazil	9,885	11,188	52	12,126	101
Developing	-6,049	-7,248	67	-8,094	56
CPEs[a]	-7,955	-9,172	-1	-9,923	-5
Rest of World	2,057	2,241	-2	2,351	-3
Net Soybean Oil Exports		(1,000 Metric Tons)			
United States	508	581	-22	646	-32
European Community	602	625	10	602	17
Japan	12	-2	0	-27	0
Argentina	1,220	1,386	3	1,460	4
Brazil	898	1,205	8	1,397	18
Developing	-2,804	-3,242	0	-3,469	-4
CPEs	-318	-440	1	-500	-2
Rest of World	-118	-113	0	-109	-2
World Prices		(U.S. Dollars per Metric Ton)			
Soybeans (FOB Gulf)	225.11	249.26	13.63	260.35	7.03
Soybean Meal (FOB Decatur)	173.79	228.73	15.83	245.99	9.85
Soybean Oil (FOB Decatur)	506.30	433.03	1.04	444.20	-9.51

[a]CPE = centrally planned economy.

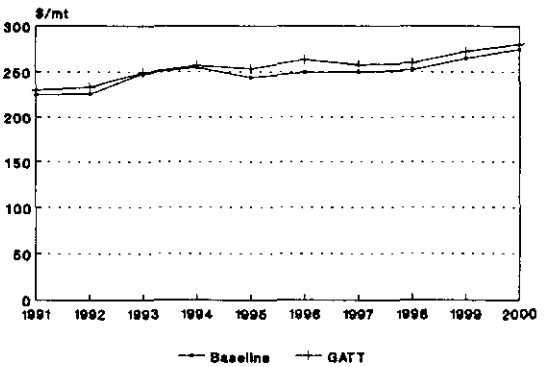

Figure 10. Soybean price under the baseline and GATT scenarios (FOB U.S. Gulf)

- Japan reduces soybean and soybean meal imports in response to the increase in world prices.
- World soybean and soybean meal prices exceed baseline levels by about 6 percent in 1996, whereas soybean oil prices increase by slightly more than 1 percent. The changes from the baseline are generally smaller for the 1997-2000 period, after countries have had time to adjust to the policy changes. In fact, soybean oil prices are actually less than baseline levels in the late 1990s as soybean production increases to meet the higher soybean meal demand.

Sugar

- Sugar sector results are presented in Table 6 and illustrated in Figure 11.
- Lower sugar prices in the European Community in the GATT scenario result in a small reduction in production and a larger increase in sugar consumption. This change results in a 21 percent reduction in net EC sugar exports in 1996, relative to the baseline.
- Japanese sugar production decreases because of reduced support levels, but the increase in world prices results in a small reduction in domestic use. The net effect is a very small increase in Japanese sugar imports.

Table 6. World sugar trade under the baseline and GATT scenarios

	1991	1996		1997-2000 Average	
	Baseline Level	Baseline Level	GATT (Change)	Baseline Level	GATT (Change)
Net Raw Sugar Exports		(1,000 Metric Tons)			
United States	-842	-266	-550	-153	-549
European Community	3,259	2,934	-720	2,993	-728
Japan	-1,814	-1,855	-10	-1,857	-13
Australia	3,098	3,097	108	3,134	111
Brazil	1,085	1,646	584	1,442	654
Thailand	2,755	2,627	118	2,668	122
Rest of World	-7,541	-8,183	470	-8,227	404
		(U.S. Cents per Pound)			
FOB Caribbean Price	14.49	12.80	2.64	12.92	2.53

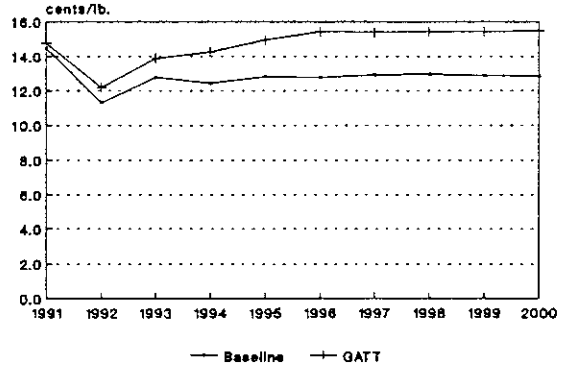

Figure 11. Sugar price under the baseline and GATT scenarios (FOB Caribbean)

- The United States is required to reduce internal sugar prices by 30 percent in the GATT scenario. U.S. production falls and consumption increases because lower sugar prices and higher corn prices reduce the competitiveness of high-fructose corn syrup and other corn sweeteners.
- With increased import demand from the United States and Japan and reduced exports from the European Community, the world price of sugar increases. GATT scenario prices exceed those of the baseline by 20 percent in 1996.
- The increase in world prices results in increased production and exports in Australia, Brazil, and Thailand and reduces imports by the rest of the world.

Meat

- Livestock sector results are presented in Table 7 and illustrated in Figures 12 through 18.
- Lower wholesale prices do not greatly affect EC meat production, in part because lower grain prices reduce livestock production costs. However, lower meat prices do result in substantial increases in meat consumption. EC net beef imports increase dramatically, and the European Community becomes a net importer of pork in some years.
- The increase in EC net beef imports results in an increase in world beef prices that in turn stimulates more production and less consumption in other trading countries. The United States, Canada, Australia, New Zealand, Argentina, Brazil, and Eastern Europe all increase beef exports. Japan reduces beef imports, relative to the baseline. The "rest of world" group of countries also sharply reduces beef imports; many of the countries in the Middle East that purchased subsidized EC beef in the baseline scenario face sharp increases in the cost of imported beef and so reduce imports.
- World pork prices increase because of the reduction in EC net exports and the slight increase in Japanese imports (caused by a reduction in import tariffs). The United States and Eastern Europe

Table 7. World meat trade under the baseline and GATT scenarios

	1991	1996		1997-2000 Average	
	Baseline Level	Baseline Level	GATT (Change)	Baseline Level	GATT (Change)
Net Beef Exports		(1,000 Metric Tons)			
United States	-415	-150	193	29	160
European Community	-17	-185	-666	-398	-700
Japan	-540	-962	56	-1,094	49
Canada	-30	-13	13	-9	23
Australia	971	960	14	1,013	27
New Zealand	369	412	6	427	19
Argentina	405	311	12	288	20
Brazil	322	262	11	257	16
Eastern Europe	249	234	42	226	52
Rest of World	-1,314	-869	319	-740	334
Net Pork Exports		(1,000 Metric Tons)			
United States	-294	-231	318	-189	381
European Community	511	585	-532	608	-597
Japan	-435	-603	-18	-608	-23
Canada	254	280	24	263	42
Eastern Europe	647	649	186	649	174
Taiwan	161	163	5	161	6
Rest of World	-843	-843	15	-884	17
Net Broiler Exports		(1,000 Metric Tons)			
United States	508	642	-95	709	-43
European Community	161	420	-47	490	-192
Japan	-371	-728	75	-975	125
Canada	-51	-56	26	-58	48
Brazil	257	326	13	362	18
Thailand	117	153	1	171	2
Eastern Europe	285	285	20	285	29
Rest of World	-905	-1,042	8	-984	12
U.S. Market Prices		(Dollars per Hundredweight)			
Omaha Steers	75.69	72.79	4.20	79.81	4.90
Barrows and Gilts	48.75	50.26	4.58	51.40	4.00
12-City Broilers	59.93	61.86	2.58	62.49	3.89

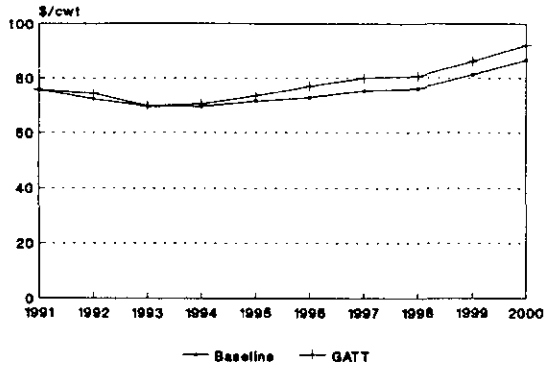

Figure 12. Beef price under the baseline and GATT scenarios (Omaha steers)

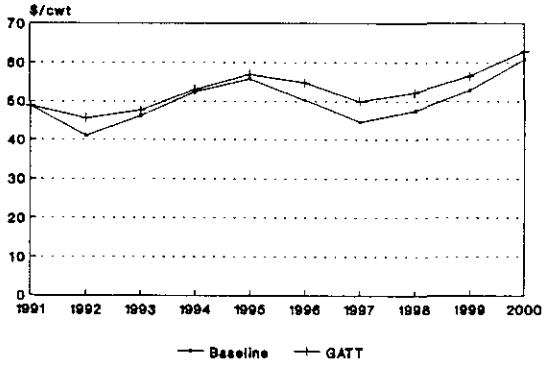

Figure 13. Pork price under the baseline and GATT scenarios (U.S. 7-market barrows and gilts)

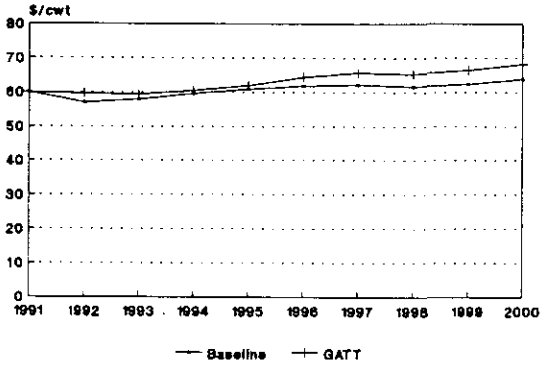

Figure 14. Broiler price under the baseline and GATT scenarios (U.S. 12-city wholesale)

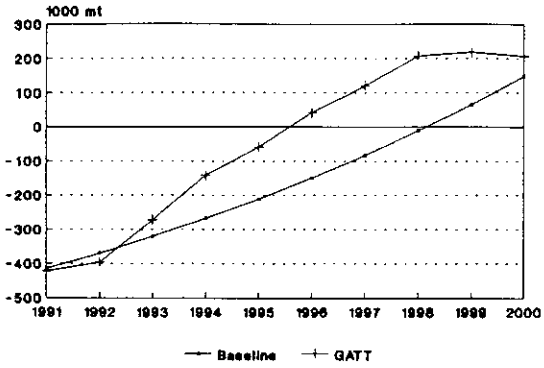

Figure 15. U.S. net beef exports under the baseline and GATT scenarios

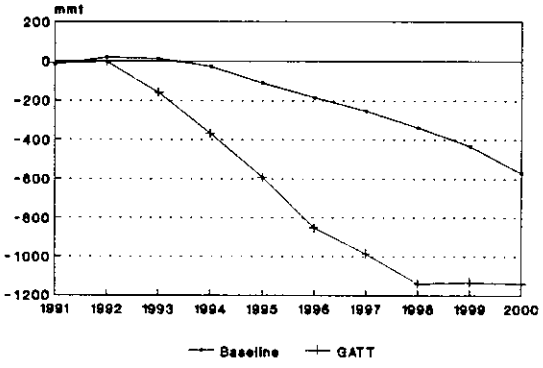

Figure 16. EC net beef exports under the baseline and GATT scenarios

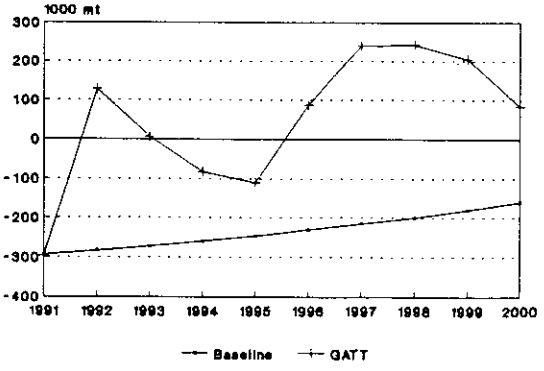

Figure 17. U.S. net pork exports under the baseline and GATT scenarios

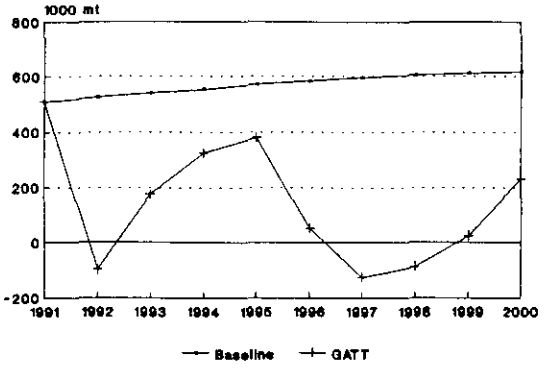

Figure 18. EC net pork exports under the baseline and GATT scenarios

increase exports by the greatest amount in response to these higher prices, although exports from Canada and Taiwan also increase.

- The impact of the quantity restriction on the European Community is much greater than that in the scenario where export expenditures were reduced. The change in EC net exports under these respective scenarios is -387 percent and -47 percent, respectively.
- In the 1986-88 reference period, the European Community exported a relatively small quantity with relatively high per-unit subsidies. In the expenditure-limiting scenario, world prices moved closer to those in the European Community, thereby allowing the European Community to export significant quantities with low per-unit subsidies. This opportunity did not exist when export quantities were limited.
- U.S. market prices for hogs increase by 7.5 percent in 1997-2000 period, relative to the baseline. Cattle prices increase by 4.3 percent and broiler prices increase by 10 percent, relative to the baseline.

Dairy

- Dairy sector results are presented in Table 8 and illustrated in Figures 19 through 24.
- In the baseline, the dairy sectors in the European Community, Japan, and Canada are heavily subsidized. Reductions in U.S. support prices and increases in world market prices mean that U.S. subsidy measures are sharply reduced in the 1990s, relative to the 1986-88 average, so that the United States is not required to reduce dairy subsidies further in the GATT scenario.
- Lower domestic prices in the GATT scenario reduce milk and dairy product production in the European Community, Japan, and Canada. In Canada, however, the decline in milk production is small, relative to the reduction in milk prices, because dairy marketing quotas in the baseline are binding for most producers. In other words, lower milk prices reduce producer income but have little effect on production levels. In the European Community, the quota must fall so that production decreases by enough to reduce subsidized exports by the required amount. Again, the restrictiveness of the export quantity restriction can be seen.
- As happens with livestock products, lower dairy product prices result in significant increases in domestic demand in the European Community, Japan, and Canada. The result is a large reduction in EC net dairy product exports (to meet the quantity restrictions), an increase in Japanese net dairy product imports, and an increase in Canadian net cheese imports.
- These changes in the European Community, Japan, and Canada increase world dairy product prices. In 1996, the world price of cheese increases by 21 percent, relative to the baseline; nonfat dry milk prices increase by 13 percent and butter prices increase by 8.5 percent, relative to the baseline. Even greater increases occur during the 1997-2000 period.
- World prices in the GATT scenario rise to the internal U.S. market prices for butter, cheese, and nonfat dry milk. The United States becomes a commercial net exporter of butter, expands commercial exports of nonfat dry milk, and reduces imports of cheese.

Table 8. World dairy trade under the baseline and GATT scenarios

	1991	1996		1997-2000 Average	
	Baseline Level	Baseline Level	GATT (Change)	Baseline Level	GATT (Change)
Net Butter Exports		(1,000 Metric Tons)			
United States	48	20	43	21	42
European Community	190	231	-108	265	-122
Japan	-12	-56	-30	-64	-44
Canada	0	0	0	0	-2
Australia	54	66	10	68	14
New Zealand	225	285	24	306	37
Rest of World	-505	-547	63	-596	76
Net Cheese Exports		(1,000 Metric Tons)			
United States	-118	-136	55	-145	59
European Community	281	279	-88	299	-91
Japan	-115	-147	-11	-159	-16
Canada	-7	-7	-54	-7	-64
Australia	51	66	28	67	32
New Zealand	115	153	21	170	26
Rest of World	-206	-208	49	-224	55
Net Nonfat Dry Milk Exports		(1,000 Metric Tons)			
United States	24	31	29	37	37
European Community	309	303	-58	300	-64
Japan	-103	-181	-73	-189	-106
Canada	28	19	5	14	4
Australia	78	87	11	87	16
New Zealand	170	210	17	225	28
Rest of World	-506	-468	70	-475	85
FOB Prices, N. Europe		(U.S. Dollars per Metric Ton)			
Butter	1,739	1,823	260	1,847	286
Cheese	2,018	2,319	460	2,432	506
Nonfat Dry Milk	1,875	2,146	354	2,205	449

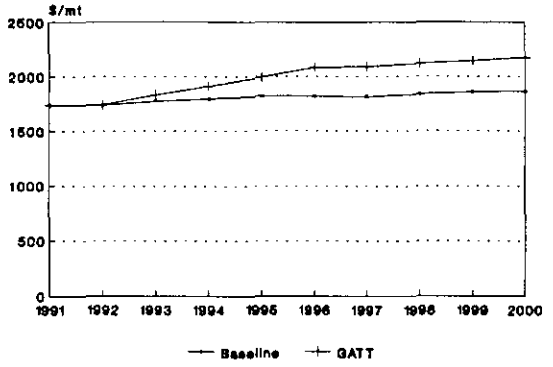

Figure 19. Butter price under the baseline and GATT scenarios (FOB Northern Europe)

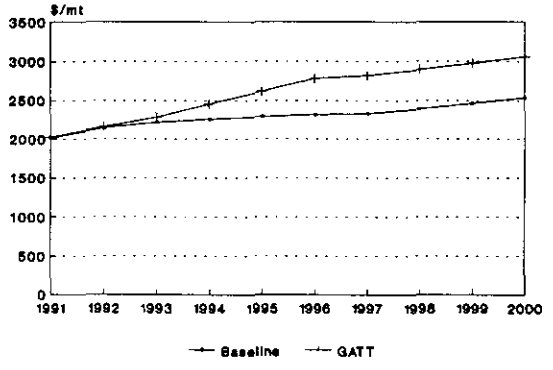

Figure 20. Cheese price under the baseline and GATT scenarios (FOB Northern Europe)

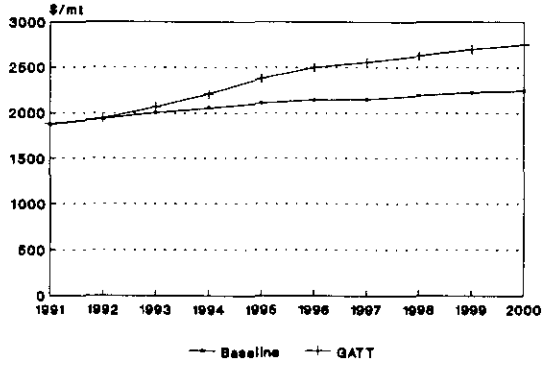

Figure 21. Nonfat dry milk price under the baseline and GATT scenarios (FOB Northern Europe)

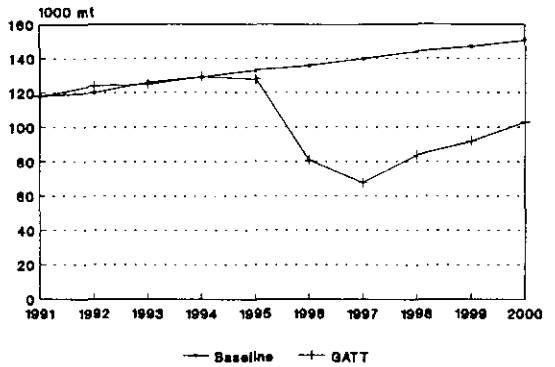

Figure 22. U.S. net cheese imports under the baseline and GATT scenarios

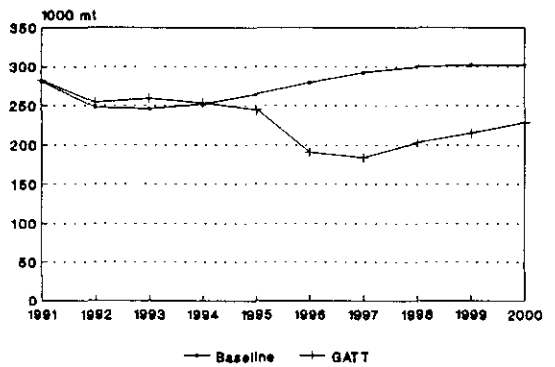

Figure 23. EC net cheese exports under the baseline and GATT scenarios

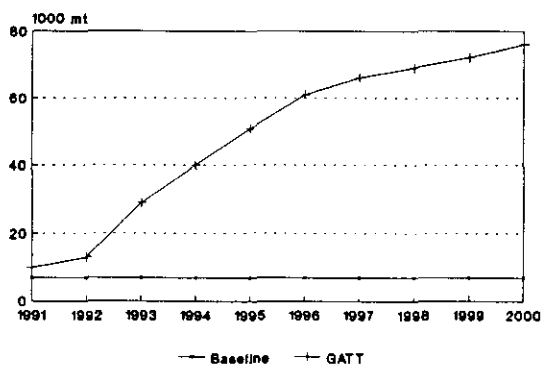

Figure 24. Canadian net cheese imports under the baseline and GATT scenarios

- Australia and New Zealand also increase net exports of dairy products in response to higher world prices, but both countries lack the production capacity to fill the entire gap left by reduced EC exports and increased Japanese and Canadian imports.
- Other countries reduce net dairy product imports in response to higher world prices.

Impacts of the GATT Scenario for Selected Countries

United States

- Results for the United States are summarized in Table 9. Earlier sections of this report summarize the reasons for changes in world trade patterns and world prices.
- U.S. production of wheat and feed grains increases slightly in the GATT scenario, relative to the baseline, in response to the increase in market prices. Rice production increases by 11 percent as producers respond to higher market prices and lower acreage reduction rates. Soybean production is essentially unchanged, whereas cotton and sugar production decline slightly because of higher prices of competing crops.
- Despite higher prices, domestic demand for soybean meal and wheat increases in response to increased livestock prices and production. Domestic corn use falls slightly.
- Net exports increase for wheat, feed grains, soybeans, and rice but decrease for soybean meal and cotton. Sugar imports increase. The decrease in net soybean meal exports is attributable to additional domestic demand for these products.
- Internal sugar prices are reduced by 29 percent in the GATT scenario. This change increases consumption and reduces production, causing the United States to increase sugar imports dramatically.
- Beef and pork production increase, relative to the baseline, because of the increase in market prices. Broiler production decreases because the increase in broiler prices is less than the increase in feed costs resulting from higher corn and soybean meal prices.

Table 9. Impacts on U.S. agricultural products under the baseline and GATT scenarios

	1991	1996		1997-2000 Average	
	Baseline Level	Baseline Level	GATT (Change)	Baseline Level	GATT (Change)
Wheat			(Million Bushels)		
Production	2,485	2,692	20	2,868	31
Domestic Use	1,097	1,086	4	1,086	8
Net Exports	1,443	1,616	21	1,780	19
Corn			(Million Bushels)		
Production	8,798	9,132	105	9,582	143
Domestic Use	6,143	6,534	16	6,653	15
Net Exports	2,223	2,574	99	2,903	121
Soybeans			(Million Bushels)		
Production	1,937	2,147	4	2,291	2
Domestic Use	1,278	1,384	-4	1,443	-5
Net Exports	633	761	9	840	7
Soybean Meal			(1,000 Tons)		
Production	28,069	30,385	-101	31,672	-127
Domestic Use	22,862	23,557	297	23,832	366
Net Exports	5,196	6,833	-402	7,842	-497
Cotton			(Million Bales)		
Production	16.75	15.91	-0.09	16.59	-0.04
Domestic Use	7.87	8.22	-0.03	8.31	-0.02
Net Exports	7.55	7.97	-0.05	8.28	-0.02
Rice			(Million Hundredweight)		
Production	167.9	159.4	17.9	160.7	23.3
Domestic Use	88.9	95.4	0.5	98.7	0.4
Net Exports	75.6	65.4	15.0	62.2	22.2
Sugar			(1,000 Tons)		
Production	7,010	8,149	-235	8,382	-288
Domestic Use	8,291	8,486	324	8,568	323
Net Exports	-1,268	-349	-574	-200	-610

Table 9. Continued

	1991	1996		1997-2000 Average	
	Baseline Level	Baseline Level	GATT (Change)	Baseline Level	GATT (Change)
Farm Prices					
Wheat (Dollars/Bushel)	3.01	3.55	0.18	3.77	0.14
Corn (Dollars/Bushel)	2.15	2.37	0.22	2.37	0.20
Soybeans (Dollars/Bushel)	5.66	6.30	0.36	6.59	0.18
Cotton (Cents/Pound)	60.71	70.96	0.81	73.19	0.75
Rice (Dollars/Cwt)	6.59	7.50	0.67	8.13	0.90
Sugar (Cents/Pound)	22.39	22.41	-6.59	22.42	-6.78
Beef			(Million Pounds)		
Production	23,215	24,015	198	22,920	182
Domestic Use	24,135	24,357	-233	22,863	-169
Net Exports	-194	-331	425	65	352
Pork			(Million Pounds)		
Production	15,949	16,367	141	16,675	473
Domestic Use	16,588	16,867	-558	17,092	-370
Net Exports	-649	-510	702	-416	841
Broilers			(Million Pounds)		
Production	18,955	21,682	-68	23,044	-105
Domestic Use	17,837	20,257	144	21,479	-11
Net Exports	1,120	1,416	-210	1,564	-94
Milk			(Million Pounds)		
Production	149,849	161,684	406	167,795	576
Fluid Use	56,784	61,144	-483	63,153	-478
Cheese			(Million Pounds)		
Production	6,184	6,949	101	7,335	109
Domestic Use	6,444	7,249	-19	7,655	-20
Net Exports	-260	-301	121	-321	129
Producer Prices			(Dollars per Hundredweight)		
Omaha Steers	75.69	72.79	4.20	79.81	4.90
Barrows and Gilts	48.75	50.26	4.58	51.40	4.00
12-City Broilers	59.93	61.86	2.59	62.49	3.89
All-Milk	13.03	13.21	0.67	13.72	0.73

Table 9. Continued

	1991	1996		1997-2000 Average	
	Baseline Level	Baseline Level	GATT (Change)	Baseline Level	GATT (Change)
Meat Consumption			(Pounds per Capita)		
Beef	67.03	64.81	-0.62	59.73	-0.44
Pork	61.76	60.16	-1.99	59.85	-1.30
Broilers	70.27	76.46	0.54	79.57	-0.03
Total	199.06	201.43	-2.07	199.15	-1.78
Total Meat Expenditures			(Billion Dollars)		
Retail	95.96	102.21	3.68	106.70	4.19
Government Costs			(Billion Dollars)		
Net CCC Outlays	4.31	6.19	-1.93	5.74	-2.14
Farm Income			(Billion Dollars)		
Crop Receipts + Paymts	86.97	101.52	-0.01	109.32	-0.04
Livestock Receipts	86.69	90.59	5.27	95.19	6.15
Net Farm Income	45.68	41.19	4.01	40.01	3.75

- Domestic broiler consumption decreases, relative to the baseline, whereas beef and pork consumption increase in 1996. Net pork exports increase by more than do beef and broiler exports.
- Milk production increases in response to higher prices caused by increased demand for dairy product exports. Higher dairy product prices result in reduced consumption levels.
- Total annual U.S. meat consumption decreases by almost two pounds per capita in 1996 because of the increase in meat prices. Retail meat expenditures in the United States increase by $3.0 billion in 1996, relative to the baseline.
- Government costs of U.S. farm programs fall by more than $2.0 billion dollars per year by 1996 because of falling deficiency payment and program participation rates.
- Higher receipts for most crops are completely offset by large reductions in sugar prices and production, leaving total crop receipts and payments nearly the same as those in the baseline. Livestock receipts exceed baseline levels by $5.3 billion in 1996. The increase in net farm income of four billion dollars in 1996 is less than the net sum of changes in receipts for livestock and crops plus government payments because feed costs and other production costs also increase in the GATT scenario.

European Community

- Results for the European Community are summarized in Table 10. Earlier sections of this report summarize the reasons for changes in world trade patterns and world prices.
- Reduced EC producer prices result in reduced production of wheat, barley, corn, soybeans, and sugar. The changes in production are modest, relative to the changes in price, but are much greater than under export expenditure restrictions.

Table 10. Impacts on EC agricultural products under the baseline and GATT scenarios

	1991	1996		1997-2000 Average	
	Baseline Level	Baseline Level	GATT (Change)	Baseline Level	GATT (Change)
Wheat			(1,000 Metric Tons)		
Production	75,350	80,980	-1,220	84,138	-1,603
Domestic Use	58,120	60,920	-640	62,392	-945
Net Exports	18,540	19,710	-480	21,370	-623
Barley			(1,000 Metric Tons)		
Production	46,307	49,123	-753	50,364	-1,055
Domestic Use	41,025	42,201	725	42,738	735
Net Exports	5,362	6,928	-1,404	7,634	-1,757
Corn			(1,000 Metric Tons)		
Production	24,836	27,320	-595	28,348	-891
Domestic Use	29,174	30,001	1,896	30,018	2,145
Net Exports	-4,424	-2,745	-2,514	-1,728	-3,030
Soybeans			(1,000 Metric Tons)		
Production	1,820	1,597	-141	1,449	-113
Domestic Use	14,072	15,848	216	16,712	293
Net Exports	-12,265	-14,264	-359	-15,276	-406
Soybean Meal			(1,000 Metric Tons)		
Production	10,043	11,367	160	12,011	218
Domestic Use	18,042	20,529	-59	21,662	-51
Net Exports	-8,012	-9,174	218	-9,662	268
Rice			(1,000 Metric Tons)		
Production	1,340	1,434	-15	1,482	-16
Domestic Use	1,639	1,815	18	1,915	9
Net Exports	-306	-390	-34	-444	-24
Sugar			(1,000 Metric Tons)		
Production	15,403	15,355	-396	15,524	-368
Domestic Use	12,123	12,407	338	12,515	356
Net Exports	3,259	2,934	-720	2,992	-727
Producer Prices			(ECUs per Metric Ton)		
Wheat	174.90	174.69	-27.52	174.10	-30.91
Barley	177.83	177.70	-41.26	177.79	-49.65
Corn	176.19	175.44	-25.30	175.22	-29.93
Soybeans	489.40	489.40	-143.04	489.40	-93.47
Sugar	449.20	449.20	-102.70	449.20	-105.23

Table 10. Continued

	1991	1996		1997-2000 Average	
	Baseline Level	Baseline Level	GATT (Change)	Baseline Level	GATT (Change)
Beef			(1,000 Metric Tons)		
Production	7,382	7,169	-62	6,974	-174
Domestic Use	7,399	7,355	604	7,372	526
Net Exports	-17	-185	-666	-398	-700
Pork			(1,000 Metric Tons)		
Production	14,390	15,172	-22	15,554	-35
Domestic Use	13,879	14,587	510	14,946	562
Net Exports	511	585	-532	608	-597
Poultry			(1,000 Metric Tons)		
Production	6,245	6,688	-27	6,854	-45
Domestic Use	5,934	6,119	21	6,215	147
Net Exports	311	570	-47	640	-192
Milk			(1,000 Metric Tons)		
Production	108,760	113,760	-1,490	115,618	-1,333
Fluid Use	29,550	29,530	530	29,450	520
Cheese			(1,000 Metric Tons)		
Production	4,504	4,907	-16	5,092	0
Domestic Use	4,253	4,600	94	4,771	88
Net Exports	281	279	-88	299	-91
Prices			(ECUs per Metric Ton)		
Beef Wholesale	3,015	3,015	-441	3,015	-388
Pork Wholesale	1,416	1,416	-204	1,416	-204
Chicken Wholesale	1,407	1,407	-118	1,407	-160
Milk Farm Price	300	306	-38	310	-40
Meat Consumption			(Kilograms per Capita)		
Beef	22.5	22.1	1.8	22.0	1.6
Pork	42.3	43.9	1.5	44.7	1.7
Poultry	18.1	18.4	0.1	18.6	0.5
Total	82.9	84.4	3.4	85.3	3.7
Total Meat Expenditures			(Billion ECUs)		
Wholesale	57.10	58.35	-4.91	59.15	-4.81

- Given little change in livestock numbers, the reduced prices for grains result in only a modest overall increase in feed use. Soybean meal consumption decreases because of changes in relative feed prices, whereas sugar consumption increases in response to lower consumer prices.
- Pork, poultry, and milk production also fall because of a reduction in EC producer prices. Lower feed prices mitigate the effects of lower meat and dairy prices, so the production declines are modest. Beef production actually increases slightly for this reason. For milk, the binding nature of the dairy quota means that milk prices must be sharply reduced (by 10 percent) before any reduction in production reduces exports.
- Lower meat and dairy product prices result in a significant increase in consumption. Total annual meat consumption increases by 3.8 kilograms per capita in 1996, even as total meat expenditures decrease by 4.7 billion ECU, a significant consumer benefit.
- Although no precise calculations were made, the GATT scenario would certainly result in lower budgetary costs for the European Community, relative to the baseline level. Reductions in export subsidies are mandated under the GATT scenario. Also, the per-unit costs of item exports would be lower and reduced oilseed subsidies and intervention buying would contribute to budgetary savings.
- Reduced market prices would reduce both crop and livestock receipts. Production costs would also be cut because of lower feed costs and reduced fertilizer use. Although no estimates were made, EC net farm income would probably fall under the GATT scenario, relative to the baseline.

Japan

- Results for Japan are summarized in Table 11. Earlier sections of this report summarize the reasons for changes in world trade patterns and world prices.

Table 11. Impacts on Japanese agricultural products under the baseline and GATT scenarios

	1991	1996		1997-2000 Average	
	Baseline Level	Baseline Level	GATT (Change)	Baseline Level	GATT (Change)
Rice			(1,000 Metric Tons)		
Production	9,419	9,618	-589	9,784	-1,043
Domestic Use	9,458	9,560	282	9,514	246
Net Exports	-11	58	-830	230	-1,229
Wheat			(1,000 Metric Tons)		
Production	940	850	-150	785	-138
Domestic Use	6,450	6,850	40	7,118	90
Net Exports	-5,490	-6,070	-230	-6,422	-251
Barley			(1,000 Metric Tons)		
Production	412	380	-93	350	-90
Domestic Use	1,653	1,794	122	1,896	152
Net Exports	-1,239	-1,435	-235	-1,572	-246
Corn			(1,000 Metric Tons)		
Production	2	2	0	2	0
Domestic Use	17,038	18,452	-79	19,184	-81
Net Exports	-17,067	-18,458	81	-19,189	81
Soybeans			(1,000 Metric Tons)		
Production	281	286	59	286	109
Domestic Use	5,134	5,688	-2	5,865	0
Net Exports	-4,898	-5,412	61	-5,589	109
Soybean Meal			(1,000 Metric Tons)		
Production	2,990	3,328	-1	3,412	0
Domestic Use	3,520	4,107	-11	4,498	-9
Net Exports	-533	-785	10	-1,043	9
Sugar			(1,000 Metric Tons)		
Production	970	976	-30	980	-31
Domestic Use	2,769	2,831	-19	2,837	-19
Net Exports	-1,814	-1,855	-10	-1,856	-14
Producer Prices			(1,000 Yen per Metric Ton)		
Rice	292.6	292.6	-64.9	292.6	-58.7
Wheat	180.4	180.4	-18.1	180.4	-6.3
Barley	162.5	162.5	-17.0	162.5	-4.3
Soybeans	198.2	183.1	4.3	176.2	1.9
Sugar Beets	18.3	18.3	-3.8	18.3	-3.8

Table 11. Continued

	1991	1996		1997-2000 Average	
	Baseline Level	Baseline Level	GATT (Change)	Baseline Level	GATT (Change)
Beef			(1,000 Metric Tons)		
Production	581	512	3	478	-16
Domestic Use	971	1,474	-53	1,572	-65
Net Exports	-390	-962	56	-1,094	49
Pork			(1,000 Metric Tons)		
Production	1,599	1,579	-3	1,578	-4
Domestic Use	1,784	1,932	15	1,935	18
Net Exports	-185	-353	-18	-358	-23
Poultry			(1,000 Metric Tons)		
Production	1,616	1,890	2	2,022	3
Domestic Use	2,032	2,705	-82	3,114	-138
Net Exports	-416	-815	84	-1,092	140
Milk			(1,000 Metric Tons)		
Production	8,080	7,130	-710	7,185	-1,140
Fluid Use	4,990	5,250	230	5,403	275
Cheese			(1,000 Metric Tons)		
Production	27	15	-8	14	-13
Domestic Use	142	162	2	174	3
Net Exports	-115	-147	-11	-159	-16
Prices			(1,000 Yen per Metric Ton)		
Beef Wholesale	699	464	16	429	16
Pork Wholesale	520	541	-6	546	-8
Chicken Wholesale	922	759	23	676	30
Milk Farm Price	92	97	-22	100	-27
Meat Consumption			(Kilograms per Capita)		
Beef	5.5	8.0	-0.2	8.5	-0.4
Pork	9.9	10.5	0.1	10.4	0.1
Poultry	12.4	16.1	-0.5	18.4	-0.9
Total	27.8	34.6	-0.6	37.3	-1.1

- The GATT scenario results in large absolute and percentage reductions in Japanese producer prices for most crops. Total production of wheat, rice, and barley declines by nearly 17 percent, 6 percent, and 24 percent, respectively.
- Reductions in consumer prices of rice and other food grains have only a limited effect on consumption levels because consumers are not very responsive to changes in food-grain prices.
- In the latter years of the GATT scenario, Japan imports more than one million tons of rice, which causes world rice prices to increase dramatically.
- Overall, livestock numbers in Japan are little changed by the GATT scenario (with the exception of milk cows), so that total feed use is also little changed.
- Beef consumption decreases in the GATT scenario, relative to the baseline, because the world price of beef increases. Japanese prices reflect world price movements because the baseline already includes the beef trade liberalization agreement of 1988. Pork consumption increases in the GATT scenario as lower tariffs reduce consumer prices. Poultry consumption falls because of higher world prices.
- Total annual meat consumption falls by 1.0 kilogram per capita in 1996, relative to the baseline. In the baseline, however, it should be noted that total annual meat consumption increases from 27.8 kilograms per capita in 1991 to an average of 37.3 kilograms per capita during the 1997-2000 period.
- The GATT scenario should reduce Japanese government outlays for agriculture, but is certain also to reduce net farm income. Consumers of rice, dairy products, and pork would benefit from lower prices.

Canada

- Results for Canada are summarized in Table 12. Earlier sections of this report summarize the reasons for changes in world trade patterns and world prices.

Table 12. Impacts on Canadian agricultural products under the baseline and GATT scenarios

	1991	1996		1997-2000 Average	
	Baseline Level	Baseline Level	GATT (Change)	Baseline Level	GATT (Change)
Wheat			(1,000 Metric Tons)		
Production	26,840	28,350	-180	29,840	-110
Domestic Use	5,790	6,450	220	6,562	168
Net Exports	19,100	21,830	-210	23,315	-260
Barley			(1,000 Metric Tons)		
Production	13,127	13,619	139	13,745	244
Domestic Use	8,461	9,007	-1	9,320	-6
Net Exports	4,468	4,558	129	4,409	241
Corn			(1,000 Metric Tons)		
Production	6,470	7,112	20	7,224	37
Domestic Use	6,669	7,228	-37	7,491	-43
Net Exports	-201	-157	58	-295	78
Prices			(Canadian Dollars per Metric Ton)		
Wheat (Off Board)	116.27	131.57	4.15	141.26	4.37
Barley (Off Board)	89.20	114.31	7.02	116.17	5.96
Corn	102.66	121.54	10.56	126.34	9.97
Beef			(1,000 Metric Tons)		
Production	1,043	1,086	6	1,092	16
Domestic Use	1,074	1,098	-6	1,101	-8
Net Exports	-30	-13	13	-9	23
Pork			(1,000 Metric Tons)		
Production	1,145	1,207	11	1,187	30
Domestic Use	892	927	-13	924	-12
Net Exports	254	280	24	263	42
Broilers			(1,000 Metric Tons)		
Production	564	656	12	708	24
Domestic Use	616	711	-13	765	-24
Net Exports	-51	-56	26	-58	49
Milk			(1,000 Metric Tons)		
Production	7,920	8,050	280	8,130	-343
Fluid Use	2,850	2,940	70	2,983	88

Table 12. Continued

	1991	1996		1997-2000 Average	
	Baseline Level	Baseline Level	GATT (Change)	Baseline Level	GATT (Change)
Cheese		(1,000 Metric Tons)			
Production	260	273	-41	283	-48
Domestic Use	260	280	13	290	16
Net Exports	-7	-7	-54	-7	-64
Prices		(Canadian Dollars per Metric Ton)			
Beef Liveweight	2,002	2,087	120	2,384	146
Pork Liveweight	1,290	1,441	131	1,537	118
Broiler Liveweight	1,213	1,257	74	1,321	117
Milk Farm Price	517	600	-83	653	-111
Meat Consumption		(Kilograms per Capita)			
Beef	40.1	38.8	-0.2	37.9	-0.3
Pork	33.3	32.7	-0.5	31.8	-0.4
Broilers	23.0	25.1	-0.5	26.3	-0.8
Total	96.3	96.6	-1.1	96.0	-1.5

- Internal Canadian grain prices in the GATT scenario are negatively affected by the reduction in transportation subsidies, but positively affected by higher world prices, relative to the baseline. Because the world price effect is larger, Canadian producer prices rise by about 6 percent.
- In 1996, wheat and barley production increase by almost 2 percent in the GATT scenario, relative to the baseline. Changes in domestic use and net exports of grains are relatively small.
- Beef, pork, and poultry production in Canada increase in the GATT scenario because of higher U.S. prices.
- Higher meat prices reduce annual consumption of beef, pork, and broilers by approximately 1.3 kilograms per capita in 1996. Canada achieves a net export position by the 1997-2000 period in beef and broilers. Net pork exports increase, relative to the baseline, and net broiler imports decrease.
- Milk production falls by about 3.6 percent in 1996 in response to a 14 percent reduction in milk price. The production decline is limited because the dairy quotas are binding for most Canadian producers, so that a large price decline is required for any production effect to occur.
- Cheese production falls, relative to butter and skim milk powder production, because a larger price reduction is required for cheese in the GATT scenario. In fact, Canadian skim milk powder prices actually increase in the GATT scenario because world prices increase and no subsidy cut is required.
- The overall picture for Canada is mixed under the GATT scenario. Crop receipts would change little because market price increases are small and production levels change little. Beef, pork, and poultry receipts would increase, but dairy receipts would decrease. The only significant government cost saving, relative to the baseline, would result from reducing transportation subsidies. Consumers would pay higher prices for meat, but they would pay lower prices for milk, butter, and cheese.

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