Implications of a Production Entitlement
Guarantee (PEG) Program
for World Commodity Markets, 1992-2000

Patrick Westhoff, Michael D. Helmar, and
Deborah L. Stephens

GATT Research Paper 92-GATT 3
October 1991

Center for Agricultural and Rural Development
Iowa State University
Ames, Iowa 50011

Patrick Westhoff is an adjunct assistant professor and Michael Helmar and Deborah Stephens are research associates, Department of Economics, Iowa State University.

Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the view of the U.S. Department of Agriculture.

CONTENTS

FIGURES

TABLES

ABSTRACT

A Production Entitlement Guarantee (PEG) program would replace existing agricultural policies with a program that would allow governments to subsidize only a fixed proportion of each farmer's historical production. World supply and demand conditions would determine the price farmers receive for any production in excess of the guaranteed PEG quantity because all import barriers and export subsidies would be eliminated.

A dynamic multicountry, multicommodity model is used to evaluate the impact of replacing current agricultural policies in the United States, the European Community, Japan, and Canada with a PEG program. For all countries and commodities, the guaranteed PEG quantity is set equal to 80 percent of each farmer's average production between 1985 and 1989. Government payments are made to farmers on their PEG production as partial compensation for revenue losses. Except for programs with environmental aims, all other programs that subsidize or protect domestic agriculture would be eliminated.

In the markets most protected under current policies (such as the Japanese rice market), domestic prices fall sharply under the PEG scenario and farmers produce little in excess of the quantities eligible for PEG payments. Reduced domestic prices result in higher levels of domestic consumption and increased imports or reduced exports. As a result, world market prices increase by more than 20 percent from baseline levels for highly protected commodities such as rice, sugar, and dairy products. World market prices for meat, poultry, wheat, feed grains, and oilseeds increase by 5 to 15 percent.

Consumers are the major beneficiaries of a PEG program in the European Community and Japan because sharply lower prices would allow them to consume more while reducing total food

expenditures. EC and Japanese farmers would receive much less income from the marketplace because of lower prices and production. Given the assumptions of the analysis, PEG payments provide only partial compensation for lost market receipts. However, if full compensation were desired, it would be possible to increase the size of PEG payments without having significant effects on market outcomes.

Most U.S. farmers benefit from a PEG program because of increased market prices and the elimination of acreage set-aside requirements. U.S. net farm income increases by an average of $9.8 billion, which is almost exactly the same as the increase in U.S. consumer expenditures on meat and dairy products. U.S. government program costs fall by an average of $3.6 billion.

IMPLICATIONS OF A PRODUCTION ENTITLEMENT GUARANTEE (PEG) PROGRAM FOR WORLD COMMODITY MARKETS, 1992-2000

In the Uruguay Round of trade negotiations being held under the auspices of the General Agreement on Tariffs and Trade (GATT), U.S. negotiators have argued that governments should be allowed to support farm income, but should do so in a way that minimizes trade distortions. A Production Entitlement Guarantee (PEG) program was proposed by Blandford et al. (1989) as a mechanism to make government payments to farmers without those payments affecting their marginal production decisions. A similar proposal to replace existing U.S. agricultural policy was made in 1983 by Congressman Neal Smith.

A PEG program would eliminate existing agricultural policies and make government payments to farmers based on their actual production up to a certain percentage of their base period production. All production above the guaranteed PEG quantity would occur at world market prices. If the guaranteed PEG quantity is set sufficiently low, most farmers would make marginal production decisions based on world market prices, not on the support price determining PEG payments. The program could thus be said to be decoupled at the margin. On the other hand, farmers would be required to produce the commodity to receive the PEG payments, so this program is less likely to suffer the political stigma attached to other decoupling proposals that are considered undisguised welfare programs.

This paper examines the implications of a PEG program that would replace existing agricultural policies in the United States, the European Community, Japan, and Canada. The analysis is 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). The FAPRI and CARD models are used to estimate supply, utilization, trade, and prices of major agricultural commodities, as well as sectoral aggregates such as government costs, farm income, and consumer food expenditures under two alternatives:

1. A baseline scenario that continues current agricultural policies in all major trading countries and regions, and

2. A PEG scenario that replaces existing agricultural policies (including internal support measures, export subsidies, and border measures) with a PEG program that makes payments to farmers based on their production up to 80 percent of their 1985-89 average production level.

The first section of the paper briefly discusses the analytical system and the assumptions used in the baseline and PEG scenarios. The second section reports baseline and PEG scenario results for international commodity markets in terms of 1992-2000 averages. The third section provides more specific results for the United States, the European Community, and Japan.

The Analytical System and Scenario Assumptions

The Analytical System

FAPRI maintains a set of econometric models of world commodity markets. For major trading countries, the FAPRI models estimate 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 program costs and farm income. Devadoss et al. (1989) provide a summary documentation of the FAPRI modeling system.

To analyze the GATT-related negotiations, CARD has developed models of the world beef, pork, poultry, dairy, and sugar markets (CARD 1991). The EC and Japanese livestock models are econometric models, but the other models are synthetic models based on elasticity estimates taken from other studies or on the best judgment of CARD analysts. All the components of the modeling system used here 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 10 years that are plausible, given what we know about the forces

likely to shape world agricultural markets in the years ahead.

Baseline Assumptions

The baseline for this analysis was prepared in November 1990 and is based on conditions at that

time. 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

1991 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.

Provisions of the U.S. Food, Agriculture, Conservation, and Trade Act of 1990 (FACTA-90) are

incorporated in the baseline. The projections do not assume a GATT agreement that requires

agricultural policy changes. The baseline was prepared before the 1991 price proposals in the

European Community were known, and no reform of the EC Common Agricultural Policy (CAP) is

assumed. The baseline does not incorporate new agricultural policies in Canada, nor does it assume

any significant change in world trade from the Soviet coup attempt and its aftermath. Greater detail

about assumptions underlying the baseline is provided in FAPRI outlook publications (FAPRI 1991a,

1991b).

PEG Scenario Assumptions

The PEG scenario assumes the elimination of all existing agricultural policies that directly or

indirectly support producer income in the United States, the European Community, Japan, and

Canada. These policies include all internal support measures, export subsidy programs, and tariff or

nontariff border measures. The only exception to this general rule is that existing policies with

important environmental objectives (e.g., long-term land retirement programs in the United States and the European Community) are assumed to continue at baseline levels.

For each country and commodity, it is assumed that governments subsidize production levels up to 80 percent of the average production between 1985 and 1989. In most cases, production eligible for PEG payments is considerably less than production levels in the baseline (Table 1). Only in the case of Japanese wheat is baseline average production during the 1992-2000 period less than the guaranteed PEG quantity. In the PEG scenario, production levels fall below baseline levels for most commodities in the European Community and Japan. In the United States, the European Community, and Canada, PEG scenario production levels exceed the guaranteed PEG quantities for all commodities, meaning that marginal production decisions are being made at world market prices. In Japan, PEG scenario production falls to or near the guaranteed PEG quantity for several commodities, including rice. Marginal production decisions in Japan, therefore, remain tied to support levels and the PEG quantities.

The per unit PEG subsidy payment is set equal to the difference between a fixed support price and the average market price (Table 2). Where appropriate, the support price used to determine PEG payments is set equal to a baseline policy price. PEG support prices in the United States are set equal to the baseline target prices for grains and cotton, the baseline loan rates for soybeans and sugar, and the baseline support price for milk. For EC crops, baseline intervention prices are used, and for Japanese crops, baseline government purchase prices are utilized. In the case of Canadian wheat and barley, support prices are set at levels that compensate producers for foregone transportation subsidies. For EC, Japanese, and Canadian livestock and dairy products, the PEG support price is set equal to the baseline market price (in the baseline, market price support is provided in large part by export subsidy and border measures, which are not always tied to specific policy prices). Domestic

Table 1. Production levels under the baseline and PEG scenarios

	1992-2000 Average Production		Production Eligible for PEG Payment
	Baseline	PEG	
United States	(1,000 Metric Tons)		
Wheat	72,493	75,361	45,586
Corn	228,029	242,141	149,106
Barley	11,385	11,620	8,404
Soybeans	60,961	61,344	41,150
Rice	6,883	7,980	5,171
Cotton	3,534	3,549	2,283
Sugar	7,139	6,998	4,859
Milk	73,662	74,194	52,130
European Community	(1,000 Metric Tons)		
Wheat	85,420	79,430	62,170
Barley	52,213	48,861	41,916
Corn	25,961	24,866	21,275
Soybeans	1,474	1,297	1,059
Rice	1,587	1,566	1,038
Sugar	16,967	16,407	11,798
Beef	8,389	8,186	6,617
Pork	14,716	14,801	10,736
Poultry	6,821	6,885	4,678
Milk	122,592	120,650	89,740
Japan	(1,000 Metric Tons)		
Wheat	534	710	710
Barley	313	289	289
Rice	9,825	7,900	7,886
Sugar	974	896	765
Beef	571	535	447
Pork	1,549	1,417	1,254
Poultry	1,620	1,585	1,157
Milk	8,683	6,420	6,050
Canada	(1,000 Metric Tons)		
Wheat	28,695	29,310	19,520
Barley	13,064	12,923	10,057
Poultry	669	663	411
Milk	8,070	7,460	6,400

Note: Production eligible for PEG payments is calculated as 80 percent of the 1989-89 average production level.

Table 2. Producer prices under the baseline and PEG scenarios

	1992-2000 Average Market Prices		1992-2000 Average Price Used to Determine PEG Payments
	Baseline	PEG	
United States			
Wheat (Dollars/Bushel)	3.36	3.71	4.00
Corn (Dollars/Bushel)	2.35	2.59	2.75
Soybeans (Dollars/Bushel)	5.97	6.45	5.02
Cotton (Cents/Pound)	68.00	68.71	72.90
Rice (Dollars/Cwt)	7.40	9.22	10.71
Sugar (Cents/Pound)	22.74	17.67	18.00
Milk (Dollars/Cwt)	12.78	13.71	10.10
European Community		*(ECUs per Metric Ton)*	
Wheat	174.1	113.4	168.6
Barley	175.1	83.6	160.1
Corn	176.1	89.7	168.6
Soybeans	439.8	177.4	489.4
Sugar	449.2	268.4	449.2
Beef Wholesale	3,000	2,531	3,000
Pork Wholesale	1,700	1,513	1,700
Chicken Wholesale	1,450	1,275	1,450
Milk Farm Price	306	211	306
Japan		*(1,000 Yen per Metric Ton)*	
Rice	279.1	29.7	279.1
Wheat	160.0	20.3	160.0
Barley	137.7	10.5	137.7
Sugar Beets	18.3	8.5	18.3
Dairy Beef Wholesale	554	390	554
Pork Wholesale	520	360	520
Chicken Retail	938	813	938
Milk Farm Price	90	36	90
Canada		*(Canadian Dollars per Metric Ton)*	
Wheat	158	156	167
Barley	110	105	116
Poultry	1,350	1,330	1,350
Milk	608	381	608

market prices are equal to world prices, with appropriate adjustments for transportation and handling costs. When market prices exceed PEG support prices, no PEG payments are made.

Except in the case of Japan, changing the prices used to determine PEG payments would not significantly alter market results. Because farmers in the United States, the European Community, and Canada produce more than the guaranteed PEG quantities in the PEG scenario, changing PEG payments would not be expected to affect production decisions. An increase in PEG support prices, for example, would be expected to increase producer income at the expense of taxpayers, but would not have a significant effect on commodity production, consumption, or trade. Even in Japan, increasing the PEG support price would not increase production because any production greater than the guaranteed PEG quantity would have to be at world market prices. On the other hand, a sharp reduction in the PEG support price could reduce production below the guaranteed PEG quantity.

Changing the quantities eligible to receive PEG payments would alter the results of the PEG scenario. For Japan, any increase in the guaranteed PEG quantity would be reflected in a corresponding increase in the production of rice and several other commodities. A reduction in the guaranteed PEG quantity would result in reduced production in Japan of some commodities, although production would exceed the guaranteed PEG level if the latter were set at a sufficiently low level. In other countries, the guaranteed PEG quantity would affect marginal production decisions if it were raised to a level equal to or greater than free-market production. The greater the guaranteed PEG level, the fewer the markets where marginal production decisions are decoupled from government programs.

International Commodity Market Results

Results of the PEG scenario generally are consistent with expectations. Relative to the baseline, PEG scenario production falls in the most subsidized or protected markets and consumption increases. Although domestic market prices fall in some countries, the prices at which world trade takes place

increase. The largest world price increases in the PEG scenario occur for the commodities most

heavily subsidized or protected in the baseline, such as dairy products, sugar, and rice (Figures 1

and 2).

Wheat, Feed Grains, and Rice

In world wheat and feed-grain markets, PEG scenario results are driven by the sharp reduction in

EC grain prices that occurs when export subsidies and variable import levies are eliminated. EC

wheat, barley, and corn production decline by 4 percent to 7 percent relative to the baseline because

of reductions in both area and yields. EC feed-grain consumption increases as corn and barley

become cheaper relative to other feedstuffs. The net effect is a 5.5 million metric ton reduction in

EC wheat net exports and an 11.1 million metric ton shift in the EC net trade position for feed grains,

again making the European Community a significant net importer of feed grains (Table 3).

The large change in the EC trade position increases world wheat and feed-grain prices relative to

the baseline. U.S. FOB prices for wheat and corn each increase by an average of 10 percent relative

to the baseline. Higher prices increase exports by the United States and other exporting countries and

reduce imports by importing countries. Canada's net trade position changes little as higher world

prices are largely offset by the elimination of transportation subsidies. Because world wheat prices

increase more than do barley and sorghum prices, both Canada and Australia increase production and

exports of wheat and average feed-grain exports fall slightly.

In the world rice market, market price reductions in Japan are the driving force behind the PEG

scenario results. Japanese rice production falls to the guaranteed PEG quantity in most years,

representing a 20 percent reduction from baseline levels. Japan is self-sufficient in rice production in

the baseline, but imports an average of 2.1 million metric tons per year in the PEG scenario.

Because the world rice market is relatively thin, this increase in Japanese imports results in an

Percentage change from baseline
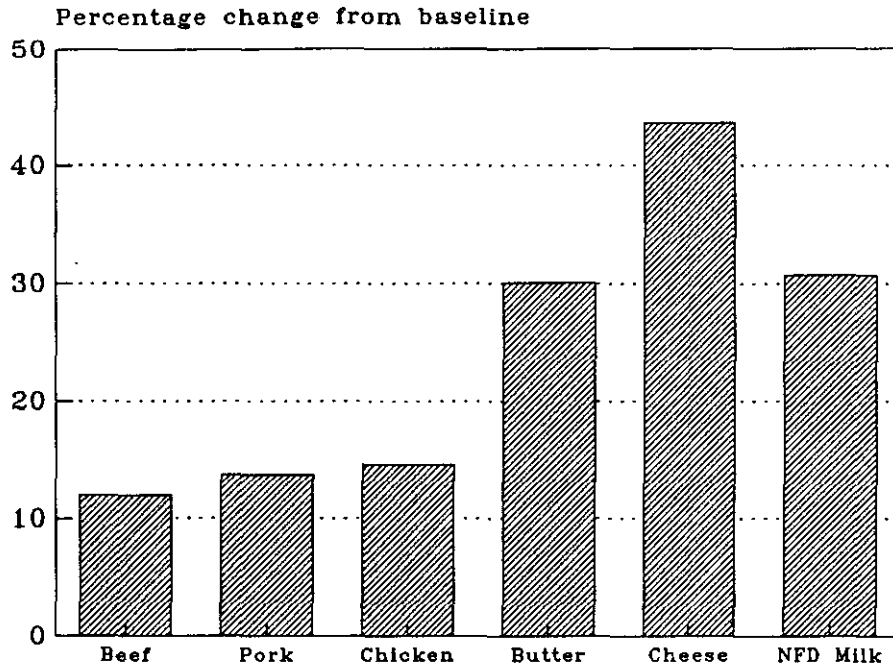
Figure 1. PEG scenario impacts on world livestock and dairy product prices

Percentage change from baseline
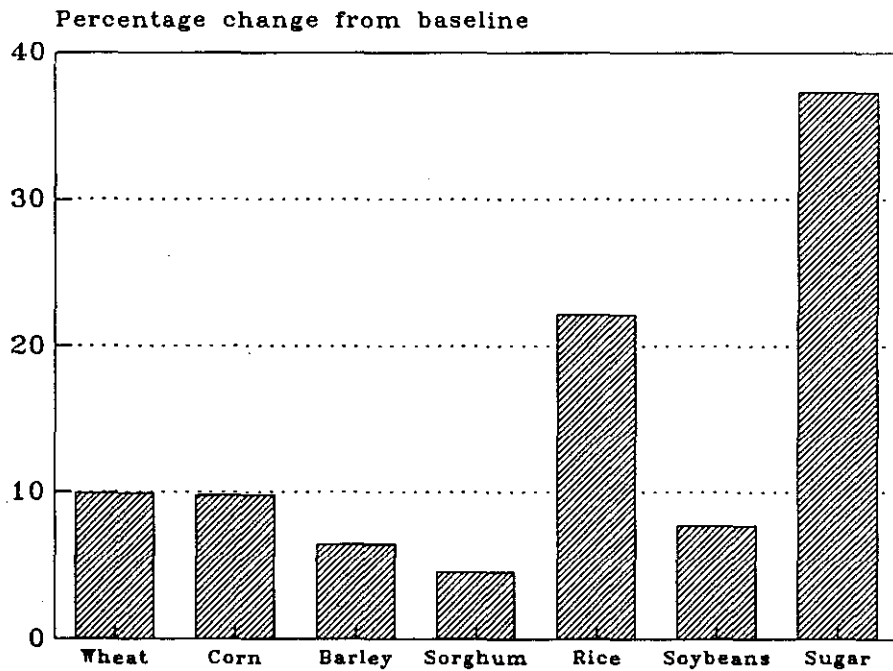
Figure 2. PEG scenario impacts on world crop prices

Table 3. World wheat, feed-grain, and rice trade under the baseline and PEG scenarios

	1992-2000 Average Levels		Change from Baseline Level
	Baseline	PEG	
Net Wheat Exports	(1,000 Metric Tons)		
United States	42,650	44,800	2,150
European Community	20,420	14,950	-5,470
Japan	-6,420	-5,990	430
Canada	22,710	22,910	200
Australia	14,040	14,620	580
Developing Net Importers	-87,050	-85,910	1,140
Soviet Union and Eastern Europe	-14,340	-13,820	520
Rest of World	7,990	8,440	450
Net Feed-Grain Exports	(1,000 Metric Tons)		
United States	66,804	76,702	9,898
European Community	1,055	-10,041	-11,096
Japan	-21,094	-20,266	828
Canada	4,132	3,981	-151
Australia	3,356	3,322	-34
Developing Net Importers	-47,959	-47,645	314
Soviet Union and Eastern Europe	-18,418	-18,415	3
Rest of World	12,124	12,362	238
Net Rice Exports	(1,000 Metric Tons)		
United States	1,752	2,512	760
European Community	-248	-156	92
Japan	0	-2,117	-2,117
Thailand	5,952	6,271	319
Pakistan	1,066	1,269	203
India	261	442	181
Indonesia	134	278	144
Rest of World	-8,917	-8,499	418
World Prices	(U.S. Dollars per Metric Ton)		
Wheat (FOB Gulf)	150.94	165.92	14.98
Corn (FOB Gulf)	106.45	116.91	10.46
Barley (FOB Pacific Northwest)	116.81	124.39	7.58
Sorghum (FOB Gulf)	107.40	112.30	4.90
Rice (FOB Bangkok)	346.40	423.06	76.66

average increase of 22 percent in world rice prices (FOB Bangkok). The United States, Thailand, and other countries increase their net exports of rice in response to the increase in world prices.

Soybeans and Soybean Products

Compared to the grain sector, changes in world soybean and soybean product trade are relatively modest in the PEG scenario (Table 4). Eliminating producer subsidies reduces soybean production in the European Community, causing a slight decline in EC soybean imports. However, EC soybean meal prices increase relative to the baseline and feed-grain prices fall, resulting in a small reduction in EC soybean meal consumption and imports.

Even though there is little change in the net trade positions of the European Community and Japan, world soybean and soybean meal prices increase because of cross-commodity effects. Higher grain prices increase competition for land in the United States, and increased U.S. livestock production increases U.S. domestic demand for soybean meal. PEG scenario soybean meal prices increase by an average of 16 percent relative to the baseline, and soybean prices increase by an average of 8 percent. Soybean oil prices actually decline by an average of 13 percent relative to the baseline because the stronger demand for soybean meal increases crush, resulting in more meal and oil production, even though there is no corresponding increase in the underlying demand for soybean oil.

The increase in soybean prices increases production and exports in Brazil and Argentina. Imports by East European countries increase slightly, in spite of higher soybean prices, because of an increase in East European livestock production and exports.

Sugar

EC, U.S., and Japanese sugar markets are all highly protected in the baseline, so the PEG scenario results in lower domestic market prices, reduced production, and increased consumption in

Table 4. World soybean and soybean product trade under the baseline and PEG scenarios

	1992-2000 Average Levels		Change from Baseline Level
	Baseline	PEG	
Net Soybean Exports	(1,000 Metric Tons)		
United States	21,902	22,072	170
European Community	-14,865	-15,070	-205
Japan	-5,315	-5,311	4
Argentina	3,331	3,344	13
Brazil	2,518	2,566	48
Developing Net Importers	-8,371	-8,335	36
Soviet Union and Eastern Europe	-1,790	-1,862	-72
Rest of World	2,590	2,596	6
Net Soybean Meal Exports	(1,000 Metric Tons)		
United States	6,143	5,522	-621
European Community	-10,101	-9,703	398
Japan	-735	-736	-1
Argentina	6,751	6,798	47
Brazil	11,095	11,217	122
Developing Net Importers	-7,211	-7,110	101
Soviet Union and Eastern Europe	-7,755	-7,818	-63
Rest of World	1,813	1,830	17
Net Soybean Oil Exports	(1,000 Metric Tons)		
United States	628	627	-1
European Community	649	652	3
Japan	-28	-28	0
Argentina	1,314	1,323	9
Brazil	1,076	1,093	17
Developing Net Importers	-3,278	-3,295	-17
Soviet Union and Eastern Europe	-306	-317	-11
Rest of World	-55	-55	0
World Soybean Prices	(U.S. Dollars per Metric Ton)		
Soybeans (FOB Gulf)	236.81	255.07	18.26
Meal (FOB Decatur)	220.38	256.35	35.97
Oil (FOB Decatur)	412.23	358.60	-53.63

Table 5. World sugar trade under the baseline and PEG scenarios

	1992-2000 Average Levels		Change from Baseline Level
	Baseline	PEG	
Net Raw Sugar Exports		(1,000 Metric Tons)	
United States	-781	-1,630	-849
European Community	3,953	2,358	-1,596
Japan	-1,879	-2,195	-316
Australia	3,050	3,256	206
Brazil	1,045	2,205	. 1,161
Thailand	2,727	2,978	251
Rest of World	-8,114	-6,972	1,143
		(U.S. Cents per Pound)	
FOB Caribbean Price	12.87	17.67	4.80

all three regions. U.S. and Japanese imports increase relative to the baseline, and EC sugar exports fall (Table 5). The result is a 37 percent average increase in world sugar prices (FOB Caribbean) relative to the baseline.

The large increase in world sugar prices increases sugar net exports by Brazil, Australia, and Thailand and reduces imports by other countries. The relatively large increase in Brazilian net exports results both from an increase in sugarcane production and from a reduction in the amount of sugarcane converted into ethanol.

Meat and Poultry

Eliminating export subsidies and import barriers significantly reduces domestic livestock and poultry prices in the European Community and Japan under the PEG scenario relative to the baseline. Because EC feed prices also fall, there is little net change in EC pork and chicken production and the decline in beef production is modest. In Japan, the reductions in domestic livestock prices are larger than those in the European Community, and there is no corresponding reduction in feed costs, so beef, pork, and chicken production all decline.

Table 6. World meat trade under the baseline and PEG scenarios

	1992-2000 Average Levels		Change from Baseline Level
	Baseline	PEG	
Net Beef Exports	(1,000 Metric Tons)		
United States	-204	370	574
European Community	351	-626	-977
Japan	-1,050	-1,387	-337
Canada	-52	-10	42
Australia	1,054	1,144	90
New Zealand	362	387	25
Argentina	377	414	37
Brazil	172	201	29
Eastern Europe	25	65	40
Rest of World	-1,035	-558	477
Net Pork Exports	(1,000 Metric Tons)		
United States	-214	294	508
European Community	652	356	-296
Japan	-699	-1,092	-393
Canada	283	345	62
Eastern Europe	160	242	82
Taiwan	181	191	10
Rest of World	-363	-336	27
Net Broiler Exports	(1,000 Metric Tons)		
United States	673	916	243
European Community	325	365	40
Japan	-655	-1,019	-364
Canada	-47	-58	-11
Brazil	318	360	42
Thailand	184	188	4
Eastern Europe	186	207	21
Rest of World	-984	-959	25
U.S. Market Prices	(U.S. Dollars per Hundredweight)		
Omaha Steers	78.22	87.60	9.38
Barrows and Gilts	51.18	58.19	7.01
12-City Broilers	58.01	66.45	8.44

In both the European Community and Japan, the PEG scenario results in significant increases in

meat consumption in response to lower consumer prices. EC beef consumption increases by almost

10 percent, resulting in a 1.0 million metric ton change in EC net beef trade and making the

European Community a net importer of beef (Table 6). EC net pork exports fall by an average of

300 thousand metric tons, relative to the baseline, and EC net poultry exports are essentially

unchanged. In Japan, the changes in livestock production and consumption result in a 1.1 million

metric ton increase in net meat and poultry imports, and the change is distributed equally among beef,

pork, and poultry.

Reduced exports by the European Community and increased imports by Japan contribute to

increased world beef, pork, and poultry prices. In addition, higher feed prices in the United States

and other countries also contribute to higher livestock prices. U.S. steer prices increase by an

average of 12 percent, compared to 14 percent for U.S. barrows and gilts and 15 percent for

wholesale U.S. broilers. Because of livestock cycles, the annual changes from baseline prices vary

considerably; for example, beef prices exceed baseline levels by less than 5 percent in 1994 and by 17

percent in 1999.

The increase in world prices causes the United States to become a net exporter of both beef and

pork. Other exporting countries also increase their beef, pork, and broiler meat exports. Average

Canadian broiler meat imports increase slightly as the effect of eliminating import restrictions

outweighs the effect of higher world broiler meat prices in most years. Net imports of beef, pork,

and broiler meat by other importing countries all are reduced by higher world market prices and,

especially in the case of beef, the end of subsidized EC exports.

Dairy Products

World dairy markets are among the most protected in the baseline, and world trade in dairy

products is relatively thin. It is not surprising, therefore, that the PEG scenario results in large shifts

Table 7. World dairy trade under the baseline and PEG scenarios

| | 1992-2000 Average Levels | | Change from |
	Baseline	PEG	Baseline Level
Net Butter Exports		(1,000 Metric Tons)	
United States	88	109	21
European Community	273	48	-225
Japan	-18	-104	-86
Canada	0	-21	-21
Australia	50	62	12
New Zealand	233	278	45
Rest of World	-626	-372	254
Net Cheese Exports		(1,000 Metric Tons)	
United States	-143	47	190
European Community	397	127	-270
Japan	-137	-169	-32
Canada	-7	-106	-99
Australia	30	74	44
New Zealand	140	184	44
Rest of World	-280	-157	123
Net Nonfat Dry Milk Exports		(1,000 Metric Tons)	
United States	13	71	58
European Community	246	222	-24
Japan	-95	-299	-204
Canada	21	11	-10
Australia	67	81	14
New Zealand	180	215	35
Rest of World	-432	-301	131
FOB Prices, North Europe		(U.S. Dollars per Metric Ton)	
Butter	1,546	2,011	465
Cheese	2,032	2,919	887
Nonfat Dry Milk	1,784	2,332	548

in world dairy product trade and large increases in world prices (Table 7). Baseline milk and dairy

product prices in Japan, Canada, and the European Community far exceed the prices at which world

trade takes place. In the PEG scenario, lower domestic prices result in reduced production and

increased consumption in all three regions.

Determining the impact of a PEG program in the European Community and Canada is

complicated by marketing quotas in the baseline. At baseline prices, EC and Canadian milk quotas

are binding, so eliminating the quotas would result in significant production increases at baseline

prices. In addition, reducing EC feed-grain prices in the PEG scenario would also contribute to

increased milk production. Therefore, despite a 31 percent reduction in EC milk prices, the estimated

reduction in EC milk production in the PEG scenario is less than 2 percent. Canadian milk prices fall

even more and there is no offsetting reduction in feed prices, so Canadian milk production falls by

more than 7 percent.

The U.S. dairy market is also protected in the baseline, but U.S. dairy product prices are much

lower in the baseline than are prices in the European Community, Canada, and Japan. In the PEG

scenario, world dairy product prices rise enough to actually exceed baseline U.S. prices because the

change in EC, Japanese, and Canadian trade is greater than that which can be supplied by Australia

and New Zealand or accounted for by reduced imports by other countries. In the PEG scenario, U.S.

milk prices increase, U.S. butter and nonfat dry milk exports increase, and the United States becomes

a net exporter of cheese.

World cheese prices (FOB northern Europe) increase by an average of more than 44 percent

from baseline levels, compared to increases of 31 percent for nonfat dry milk and 30 percent for

butter. Cheese production and consumption in the European Community and Canada are very large

relative to net trade, so the large reduction in domestic cheese prices in the PEG scenario causes

modest changes in cheese demand that translate into large changes in net trade. For butter and nonfat

dry milk, eliminating EC consumption subsidies offsets some of the impact of lower domestic market prices on consumption. In addition, the end of subsidized U.S. and EC exports results in a greater reduction in world butter and nonfat dry milk imports than would result from the increase in world prices alone.

Country Results

United States

In the baseline, U.S. grain and cotton farmers receive deficiency payments if they agree to restrict their planted acreage in accordance with base acreage and acreage reduction program (ARP) requirements. In the PEG scenario, U.S. farmers are not required to limit acreage to receive PEG payments. Eliminating acreage reduction requirements and increasing market prices increase U.S. planted acreage for wheat, feed grains, and rice. The increase in planted acreage is less than the reduction in program-idled acreage, however, because much of the land idled in the baseline is poor quality land that cannot profitably produce crops at projected market prices (Table 8). Soybean acreage changes little because the effect of higher soybean prices is offset by higher prices for corn, wheat, and other competing crops. Cotton acreage also remains essentially unchanged as the effect of eliminating acreage reduction requirements is offset by increased competition from soybeans.

U.S. crop yields are affected little by the introduction of a PEG program. In the baseline, program yields used to determine deficiency payments are frozen, so marginal input decisions should be based on market prices rather than target prices. Market prices also determine marginal input decisions in the PEG scenario. PEG production changes from baseline levels, therefore, reflect changes in planted acreage. Wheat, feed-grain, and rice production increase, and cotton and soybean production are essentially unchanged. Sugar production falls in response to lower domestic prices.

Domestic use of wheat, feed grains, and soybean meal increases relative to the baseline, despite higher feed prices, because of the significant increase in U.S. livestock production and prices.

Table 8. Impacts on U.S. agricultural products under the baseline and PEG scenarios

| | 1992-2000 Average Levels | | | |
	Baseline	PEG	Change from Baseline Level	
Wheat	----------------(Million Bushels)----------------			(Percent)
Production	2,664	2,769	105	4.0
Domestic Use	1,099	1,122	24	2.1
Net Exports	1,568	1,650	83	5.3
Corn	----------------(Million Bushels)----------------			
Production	8,977	9,533	556	6.2
Domestic Use	6,591	6,791	200	3.0
Net Exports	2,361	2,739	378	16.0
Soybeans	----------------(Million Bushels)----------------			
Production	2,240	2,254	14	0.6
Domestic Use	1,422	1,431	9	0.6
Net Exports	807	811	4	0.5
Soybean Meal	----------------(1,000 Tons)----------------			
Production	31,233	31,439	206	0.7
Domestic Use	24,461	25,351	890	3.6
Net Exports	6,772	6,087	-685	-10.1
Cotton	----------------(Million Bales)----------------			
Production	16.2	16.3	0.1	0.4
Domestic Use	9.1	9.2	0.0	0.2
Net Exports	7.1	7.1	0.0	0.4
Rice	----------------(Million Hundredweight)----------------			
Production	151.7	175.9	24.2	15.9
Domestic Use	96.5	96.5	0.0	0.0
Net Exports	55.2	79.1	23.9	43.3
Sugar	----------------(1,000 Tons)----------------			
Production	7,869	7,714	-155	-2.0
Domestic Use	9,274	9,533	259	2.8
Net Imports	916	1,341	425	46.4
Farm Prices				
Wheat (Dollars/Bushel)	3.36	3.71	0.35	10.4
Corn (Dollars/Bushel)	2.35	2.59	0.24	10.2
Soybeans (Dollars/Bushel)	5.97	6.45	0.48	8.0
Soybean Meal (Dollars/Ton)	199.93	232.56	32.63	16.3
Cotton (Cents/Pound)	68.00	68.71	0.71	1.0
Rice (Dollars/Cwt)	7.40	9.22	1.82	24.6
Sugar (Cents/Pound)	22.74	17.67	-5.07	-22.3

Table 8. Continued.

| | 1992-2000 Average Levels | | | |
	Baseline	PEG	Change from Baseline Level	
Beef	----------------(Million Pounds)----------------			(Percent)
Production	24,518	25,288	770	3.1
Domestic Use	24,974	24,476	-498	-2.0
Net Imports	449	-815	-1,264	-281.5
Pork	----------------(Million Pounds)----------------			
Production	16,225	16,687	462	2.8
Domestic Use	16,697	16,039	-658	-3.9
Net Imports	472	-648	-1,120	-237.3
Broilers	----------------(Million Pounds)----------------			
Production	22,867	23,205	338	1.5
Domestic Use	21,380	21,182	-198	-0.9
Net Exports	1,483	2,018	535	36.1
Milk	----------------(Million Pounds)----------------			
Production	162,397	163,570	1,173	0.7
Fluid Use	59,782	59,116	-666	-1.1
Cheese	----------------(Million Pounds)----------------			
Production	7,172	7,549	377	5.3
Domestic Use	7,459	7,414	-45	-0.6
Net Imports	315	-103	-418	-132.7
Butter	----------------(Million Pounds)----------------			
Production	1,317	1,295	-22	-1.7
Domestic Use	1,138	1,076	-62	-5.4
Net Exports	195	240	45	23.1
Nonfat Dry Milk	----------------(Million Pounds)----------------			
Production	870	856	-14	-1.6
Domestic Use	778	657	-121	-15.6
Net Exports	28	157	129	460.7
Producer Prices	-------(U.S. Dollars per Hundredweight)-------			
Omaha Steers	78.22	87.60	9.38	12.0
Barrows and Gilts	51.18	58.19	7.01	13.7
12-City Broilers	58.01	66.45	8.44	14.5
All-Milk	12.78	13.71	0.93	7.3
Meat Consumption	---------------(Pounds per Capita)---------------			
Beef	66.49	65.15	-1.34	-2.0
Pork	59.58	57.24	-2.34	-3.9
Broilers	80.59	79.85	-0.74	-0.9
Total	206.66	202.24	-4.42	-2.1

Table 8. Continued.

| | 1992-2000 Average Levels | | Change from Baseline Level | |
	Baseline	PEG		
15-Crop Area	----------------(Million Acres)-------------------			(Percent)
Planted	273.9	281.6	7.7	2.8
Idled by Government Programs	51.5	33.4	-18.1	-35.1
Planted Plus Idled	325.4	315.0	-10.3	-3.2
Consumer Expenditures	----------------(Billion Dollars)-------------------			
Meat	149.82	156.16	6.34	4.2
Poultry	35.73	37.69	1.96	5.5
Dairy	81.30	82.69	1.39	1.7
Total	266.85	276.54	9.69	3.6
Government Costs	----------------(Billion Dollars)-------------------			
Net CCC Outlays	6.01	2.46	-3.55	-59.0
Conservation Reserve	1.73	1.73	0.00	0.0
Total Government Costs	7.74	4.19	-3.55	-45.8
Farm Income	----------------(Billion Dollars)-------------------			
Livestock Receipts	95.28	108.00	12.72	13.4
Crop Receipts	97.24	101.91	4.67	4.8
Government Payments	5.19	3.85	-1.34	-25.9
Net Farm Income	42.53	52.35	9.82	23.1

Consumer rice demand falls slightly, but seed demand increases so the net change in domestic rice use is insignificant. Sugar consumption increases in response to lower prices. As described in the previous section, U.S. exports of wheat, feed grains, and rice increase. Sugar imports increase, and soybean meal exports decline relative to the baseline.

Because there are few policies directly protecting the U.S. livestock industry in the baseline, PEG scenario changes in livestock production and prices are driven by changes in livestock product trade and feed prices. In the PEG scenario, the United States becomes a significant net exporter of beef and pork and further increases its exports of broiler meat. The effect of higher livestock prices from increased export demand more than offsets the effect of higher feed prices, so U.S. production

of beef, pork, and broiler meat exceeds baseline levels. Higher meat prices translate into a 2 percent average reduction in U.S. meat consumption.

The U.S. dairy industry is protected by import restrictions in the baseline, and the government also supports market prices by purchasing dairy products and disposing of them in domestic and external markets. If there were no change in the policies of other countries, one would expect U.S. milk prices and production to fall. However, the sharp increase in world prices from the elimination of EC, Japanese, and Canadian dairy policies causes a 7 percent average increase in U.S. milk prices and a small increase in U.S. milk production. Much of the increase in U.S. milk production is processed into cheese because the United States becomes a net cheese exporter in the PEG scenario.

In terms of sectoral aggregates, the PEG scenario benefits U.S. producers and taxpayers at the expense of U.S. consumers. Higher market prices reduce consumption and increase consumer expenditures on meat, poultry, and dairy products by an estimated $9.7 billion per year. Government outlays decline by $3.6 billion per year, in part because the increase in market prices means that the PEG payments in the scenario are generally smaller than the deficiency payments in the baseline, and in part because the elimination of export subsidy, milk price support, and other programs directly reduces outlays. Net farm income increases by $9.8 billion per year as a large increase in livestock receipts and a smaller increase in crop receipts more than offset lower government payments and an increase in production costs from increased production and higher feed prices.

European Community

The sharp reduction in EC market prices for grain in the PEG scenario significantly reduces EC grain production and increases domestic consumption of corn and barley (Table 9). PEG scenario soybean production declines relative to the baseline because of a decline in soybean producer prices, and soybean meal consumption also declines because of an increase in soybean meal prices. Sugar

Table 9. Impacts on EC agricultural products under the baseline and PEG scenarios

| | 1992-2000 Average Levels | | | |
	Baseline	PEG	Change from Baseline Level	
Wheat	----------------(1,000 Metric Tons)----------------			(Percent)
Production	85,420	79,430	-5,990	-7.0
Domestic Use	65,043	64,920	-123	-0.2
Net Exports	20,417	14,950	-5,467	-26.8
Barley	----------------(1,000 Metric Tons)----------------			
Production	52,213	48,861	-3,352	-6.4
Domestic Use	46,807	48,854	2,047	4.4
Net Exports	5,416	510	-4,906	-90.6
Corn	----------------(1,000 Metric Tons)----------------			
Production	25,961	24,866	-1,095	-4.2
Domestic Use	30,440	35,483	5,043	16.6
Net Imports	2,837	8,827	5,990	211.1
Soybeans	----------------(1,000 Metric Tons)----------------			
Production	1,474	1,297	-177	-12.0
Domestic Use	16,324	16,354	30	0.2
Net Imports	14,865	15,070	205	1.4
Soybean Meal	----------------(1,000 Metric Tons)----------------			
Production	11,586	11,607	21	0.2
Domestic Use	21,675	21,298	-377	-1.7
Net Imports	10,101	9,703	-399	-3.9
Rice	----------------(1,000 Metric Tons)----------------			
Production	1,587	1,566	-20	-1.3
Domestic Use	1,830	1,717	-112	-6.1
Net Imports	248	156	-92	-37.2
Sugar	----------------(1,000 Metric Tons)----------------			
Production	16,967	16,407	-560	-3.3
Domestic Use	13,002	14,055	1,053	8.1
Net Exports	3,953	2,358	-1,595	-40.3
Producer Prices	--------------(ECUs per Metric Ton)-------------			
Wheat	174.1	113.4	-60.7	-34.9
Barley	175.1	83.6	-91.5	-52.3
Corn	176.1	89.7	-86.4	-49.1
Soybeans	439.8	177.7	-262.1	-59.6
Sugar	449.2	268.4	-180.8	-40.2

Table 9. Continued

	1992-2000 Average Levels		
	Baseline	PEG	Change from Baseline Level
Beef	----------------(1,000 Metric Tons)----------------		(Percent)
Production	8,389	8,186	-203	-2.4
Domestic Use	8,038	8,812	774	9.6
Net Exports	351	-626	-977	-278.3
Pork	----------------(1,000 Metric Tons)----------------		
Production	14,716	14,801	85	0.6
Domestic Use	14,064	14,445	381	2.7
Net Exports	652	356	-296	-45.4
Poultry	----------------(1,000 Metric Tons)----------------		
Production	6,821	6,885	64	0.9
Domestic Use	6,451	6,477	26	0.4
Net Exports	369	408	39	10.6
Milk	----------------(1,000 Metric Tons)----------------		
Production	122,592	120,650	-1,942	-1.6
Fluid Use	31,396	32,818	1,422	4.5
Cheese	----------------(1,000 Metric Tons)----------------		
Production	5,193	5,205	12	0.2
Domestic Use	4,774	5,070	296	6.2
Net Exports	397	127	-270	-68.0
Prices	----------------(ECUs per Metric Ton)----------------		
Beef Wholesale	3,000	2,531	-469	-15.6
Pork Wholesale	1,700	1,513	-187	-11.0
Chicken Wholesale	1,450	1,275	-175	-12.1
Milk Farm Price	306	211	-95	-31.1
Meat Consumption	----------------(Kilograms per Capita)----------------		
Beef, Pork, and Poultry	83.1	86.5	3.4	4.1
Value of Consumption	----------------(Billion ECUs)----------------		
Meat, Poultry, and Dairy[a]	95.95	80.92	-15.03	-15.7
Value of Production	----------------(Billion ECUs)----------------		
Livestock and Dairy[a]	102.28	80.80	-21.48	-21.0
Crops[b]	31.55	16.77	-14.78	-46.8
PEG Payments	----------------(Billion ECUs)----------------		
Livestock and Dairy[a]	0.00	15.16	15.16	--
Crops[b]	0.00	10.31	10.31	--

[a]Beef, pork, poultry, mutton, and dairy products, evaluated at producer prices.
[b]Includes wheat, barley, corn, rice, rapeseed, and soybeans.

production falls slightly and sugar consumption increases significantly in response to reduced EC market prices.

EC livestock production responds to reductions in both livestock prices and feed prices in the PEG scenario. EC beef prices fall more than do pork and poultry prices, and feed prices are less important in total production costs for beef than for pork and poultry. As a result, EC beef production declines by 2 percent relative to the baseline and average pork and poultry production increase by less than 1 percent. EC beef consumption increases by almost 10 percent from baseline levels, compared to a 3 percent increase for pork and less than a 1 percent increase for poultry. Total per capita meat and poultry consumption increases by 4 percent from the baseline level.

EC milk production falls slightly in the PEG scenario as the effect of sharply lower milk prices more than offsets reduced feed prices and eliminated marketing quotas. Consumption of milk and cheese increases significantly in response to reduced market prices. Changes in butter and nonfat dry milk consumption are smaller because of the elimination of special consumption subsidies. Changes in relative prices sharply reduce the production of butter and nonfat dry milk, but there is almost no change in EC cheese production.

Valued at producer prices, the value of EC consumption of meat, poultry, and dairy products falls by an average of 15.0 billion ECUs per year in the PEG scenario relative to the baseline. The value of EC livestock and dairy production falls even more, by 21.5 billion ECUs, consistent with the reduction in EC exports and increase in EC imports. PEG payments to the livestock and dairy sectors total 15.1 billion ECUs per year, so the decline in total returns to the sector is approximately 6.4 billion ECUs. Considering the effect of lower feed prices on livestock sector production costs, net profitability in the livestock sector is likely to be near baseline levels in the PEG scenario.

For the crop sector, the value of EC production of wheat, barley, corn, rice, rapeseed, and soybeans falls by 14.8 billion ECUs in the PEG scenario. The corresponding PEG payment is 10.3

billion ECUs, implying a 4.5 billion ECU reduction in total returns. The reduction in area planted

and yields would be expected to reduce total production costs, but it seems likely that net returns to

crop producers would remain below baseline levels. The 25.4 billion ECUs spent on PEG payments

is comparable to current levels of EC expenditures on the commodities examined in this paper, but no

specific estimate of baseline government costs was prepared. EC consumers clearly benefit from a

PEG program compared with continuing current policies, but the effects on producers and taxpayers

are less certain. Changing the formula determining the size of PEG payments could change the

relative effects of the PEG scenario on producers and taxpayers without having significant effects on

commodity supply and demand.

Japan

Given a dramatic reduction in Japanese market prices, producers are unlikely to produce

significant amounts of rice, wheat, or barley beyond the amounts qualifying for PEG payments (Table

10). Because Japanese rice demand is very price inelastic, the estimated increase in rice consumption

in the PEG scenario relative to the baseline is small. Japanese corn, sorghum, and soybean meal

consumption all decline in the PEG scenario because of the increase in world prices of feedstuffs.

Sugar production falls and consumption increases in response to the reduction in Japanese sugar

prices.

Eliminating import barriers also significantly reduces Japanese livestock, poultry, and dairy

product prices. Lower market prices reduce Japanese production and increase domestic consumption

in the PEG scenario. Per capita Japanese consumption of beef, pork, and poultry increases by an

average of 15 percent from baseline levels. Milk production drops most dramatically, given a 60

percent average reduction in Japanese milk prices, and milk production only slightly exceeds the

guaranteed PEG quantity in some years. In the PEG scenario, almost all of Japanese milk production

is consumed as fluid milk, and almost all butter, cheese, and nonfat dry milk are imported.

Table 10. Impacts on Japanese agricultural products under the baseline and PEG scenarios

	1992-2000 Average Levels		
	Baseline	PEG	Change from Baseline Level
Rice	----------------(1,000 Metric Tons)----------------		(Percent)
Production	9,825	7,900	-1,925	-19.6
Domestic Use	9,404	9,687	283	3.0
Net Imports	0	2,117	2,117	--
Wheat	----------------(1,000 Metric Tons)----------------		
Production	534	710	176	33.0
Domestic Use	6,860	6,650	-210	-3.1
Net Imports	6,416	5,990	-426	-6.6
Barley	----------------(1,000 Metric Tons)----------------		
Production	313	289	-24	-7.7
Domestic Use	1,553	1,843	290	18.7
Net Imports	1,236	1,560	324	26.2
Corn	----------------(1,000 Metric Tons)----------------		
Production	0	0	0	--
Domestic Use	16,539	15,721	-818	-4.9
Net Imports	16,547	15,729	-818	-4.9
Sorghum	----------------(1,000 Metric Tons)----------------		
Production	0	0	0	--
Domestic Use	3,154	2,828	-326	-10.3
Net Imports	3,152	2,818	-334	-10.6
Soybeans	----------------(1,000 Metric Tons)----------------		
Production	285	289	5	1.7
Domestic Use	5,588	5,588	0	0.0
Net Imports	5,315	5,311	-4	-0.1
Soybean Meal	----------------(1,000 Metric Tons)----------------		
Production	3,244	3,245	1	0.0
Domestic Use	3,995	3,976	-19	-0.5
Net Imports	735	716	-19	-2.6
Sugar	----------------(1,000 Metric Tons)----------------		
Production	974	896	-78	-8.0
Domestic Use	2,851	3,092	241	8.4
Net Imports	1,879	2,195	316	16.8
Producer Prices	------------(1,000 Yen per Metric Ton)-------------		
Rice	279.1	29.7	-249.4	-89.4
Wheat	160.0	20.3	-139.7	-87.3
Barley	137.7	10.5	-127.2	-92.4
Sugar Beets	18.3	8.5	-9.8	-53.7

Table 10. Continued

	1992-2000 Average Levels			
	Baseline	PEG	Change from Baseline Level	
Beef	----------------(1,000 Metric Tons)----------------			(Percent)
Production	571	535	-36	-6.3
Domestic Use	1,621	1,922	301	18.6
Net Imports	1,050	1,387	337	32.1
Pork	----------------(1,000 Metric Tons)----------------			
Production	1,549	1,417	-132	-8.5
Domestic Use	2,248	2,509	261	11.6
Net Imports	699	1,092	393	56.2
Poultry	----------------(1,000 Metric Tons)----------------			
Production	1,620	1,585	-35	-2.2
Domestic Use	2,285	2,614	329	14.4
Net Imports	665	1,029	364	54.7
Milk	----------------(1,000 Metric Tons)----------------			
Production	8,683	6,420	-2,263	-26.1
Fluid Use	5,352	5,902	550	10.3
Cheese	----------------(1,000 Metric Tons)----------------			
Production	29	4	-25	-86.2
Domestic Use	166	172	6	3.6
Net Imports	137	169	32	23.4
Prices	----------------(Yen per Kilogram)----------------			
Import Beef Wholesale	554	390	-164	-29.6
Pork Wholesale	520	360	-160	-30.8
Chicken Retail	938	813	-125	-13.3
Milk Farm Price	90	36	-54	-60.4
Meat Consumption	----------------(Kilograms per Capita)----------------			
Beef, Pork, and Poultry	32.7	37.7	5.0	15.2
Value of Consumption	----------------(Trillion Yen)----------------			
Meat, Poultry, and Dairy[a]	4.29	3.38	-0.91	-21.1
Value of Production	----------------(Trillion Yen)----------------			
Livestock and Dairy[a]	2.94	1.86	-1.08	-36.8
Crops[b]	2.87	0.25	-2.62	-91.2
PEG Payments	----------------(Trillion Yen)----------------			
Livestock and Dairy[a]	0.00	0.61	0.61	--
Crops[b]	0.00	2.10	2.10	--

[a]Beef, pork, poultry, and dairy products, evaluated at producer prices.
[b]Includes rice, wheat, and barley.

The value of consumption for meat, poultry, and dairy products falls by an average of 0.9 trillion yen per year from baseline levels when evaluated at producer prices. In addition, consumer expenditures on rice and other foods would also decline sharply in the PEG scenario. The value of livestock and dairy production is reduced by an average of 1.1 trillion yen, and the value of production for rice, wheat, and barley falls even more, by 2.6 trillion yen. PEG payments offset much of the reduction in producer returns, but total producer returns remain below baseline levels.

No estimate of baseline government costs was made, but it seems certain that PEG payments would far exceed baseline government expenditures on agricultural programs. Japanese consumers, therefore, would greatly reduce their expenditures on food, but would have to pay significantly more taxes if farm income is to be maintained near baseline levels.

REFERENCES

Blandford, D., H. de Gorter, B. Gardner, and D. Harvey. 1989. "There is a Way to Support Farm
    Income with Minimal Trade Distortions." *Choices* 1(1989):20-25.

Center for Agricultural and Rural Development (CARD). 1991. "Implications of a GATT
    Agreement for World Commodity Markets, 1991-2000." GATT Research Paper 91-GATT 1.
    Ames, IA: Center for Agricultural and Rural Development, Iowa State University.

Devadoss, S., P. Westhoff, M. Helmar, E. Grundmeier, K. Skold, W.H. Meyers, and S.R. Johnson.
    1989. "The FAPRI Modeling System at CARD: A Documentation Summary." CARD
    Technical Report 89-TR 13. Ames, IA: Center for Agricultural and Rural Development, Iowa
    State University.

Food and Agricultural Policy Research Institute (FAPRI). 1991a. "FAPRI 1991 U.S. Agricultural   .
    Outlook." FAPRI Staff Report #1-91. Ames, IA: Food and Agricultural Policy Research
    Institute, Iowa State University.

_____. 1991b. "FAPRI 1991 World Agricultural Outlook." FAPRI Staff Report #2-91.
    Ames, IA: Food and Agricultural Policy Research Institute, Iowa State University.

Smith, Neal. 1983. Testimony before the House Committee on Agriculture regarding alternative
    farm programs, Oct. 19, 1983. Mimeo.