Evaluating EU Agricultural Policy Reform Using the EU WTO Model

Jim Stout, Susan Leetmaa and Mary Anne Normile
Economic Research Service, USDA
1800 M Street NW #5065
Washington, DC 20036-5831

Contact e-mail: sleetmaa@ers.usda.gov

Evaluating EU Agricultural Policy Reform Using the EU WTO Model

Abstract

This paper provides an overview of the European Union component of the recently developed ERS/Penn State WTO Model. The model is a multi-region, multi-commodity partial equilibrium trade model which allows the user to simulate the effects of reducing or eliminating tariffs and TRQs, export subsidies, and domestic support policies. The paper describes how the model captures the important agricultural policies of the EU, and presents results from model simulations of domestic support liberalization, export subsidy elimination, and tariff removal.

Keywords: WTO, agricultural trade, domestic support, export subsidy, European Union

This paper provides an overview of the European Union component of the recently developed ERS/Penn State WTO Model, which was developed jointly by USDA's Economic Research Service (ERS) and the Pennsylvania State University (Penn State). The model is a multi-region, multi-commodity partial equilibrium trade model. It allows the user to simulate the effects of reducing or eliminating tariffs and TRQs, export subsidies, and domestic support policies. This paper will provide some background on the significance of domestic support to the EU, describe how the model captures the important domestic support policies of the EU, and describe how the model can be used to address important issues in trade liberalization, including reductions in export subsidies and tariffs. Results from model simulations of domestic support liberalization and tariff elimination will be presented to determine the relative impact of domestic support liberalization versus tariff elimination. The main objective of this paper is to present the model to other researchers with expertise on European policy and policy modeling in hope of stimulating discussion on the methodology and results.

Background

The EU is one the top "users" of domestic support. The EU's AMS ceiling relative to the value of agricultural production ranks among the top WTO member countries—only Japan, Norway, and Switzerland are higher among developed countries. The EU is also one of the few countries continuing to notify blue box support—this type of support accounts for 10% of the value of agricultural production (figure 1).

The EU's AMS ceiling has declined from about 80 billion euros in 1996 to 67 billion euros in 2000. EU actual support levels, measured by the current AMS, have been well within the ceiling—about 65% of the AMS commitment level (figure 2). The ease with which these commitments have been met is largely due to the exemption of a large part of domestic support through the blue box—production-limiting payments--and in part to the high base level of support that predated the 1993 CAP reforms that reduced amber box support. The EU provides about 20 billion euros in support to its agriculture sector through the blue box. The Agenda 2000 reforms of the CAP will further reduce amber box support by reducing intervention prices for grains, beef, and eventually dairy. However, Agenda 2000 will increase blue box support through higher compensatory payments to grain and beef producers.

Several WTO members have proposed further disciplines on the use of domestic support, including the elimination of the blue box exemption. Reducing amber box limits could have significant impacts on how the EU provides support to its agricultural sector. Eliminating the blue box exemption would expose to WTO disciplines a large part of EU domestic support that is currently sheltered from cuts. Either prospect could have significant impacts on EU production, consumption, and trade.

Domestic support in the EU is, in many instances, closely linked to border measures. In the case of cereals, this linkage is explicit—cereal tariffs are limited by a limit on the duty-paid price equal to 152 percent of the intervention price. Under current policy, a cut in the intervention price will reduce border protection for cereals. High tariffs also allow some measure of price support to other commodities, even when support prices are being reduced. The EU has indicated its intention to rely on tariffs to bolster prices of beef, for example, in the face of additional support price cuts (European Commission, 2002). Thus, while it is possible to reduce domestic support without affecting most tariffs, reducing tariff could have serious implications for the revenue of producers who rely on high tariff-protected prices. Export subsidies are also linked to domestic support in that they reflect the difference between internal market prices, which reflect price support activities, and the world market price. Export subsidies, although reduced in importance as a result of the Uruguay Round Agreement, continue to help support prices by removing excess supplies from the domestic market. Further cuts in, or elimination of, export subsidies, without either a reduction in either intervention prices or limits on production, could overburden intervention and result in stock accumulation.

General Model Features

The EU WTO Model is a component of the ERS/Penn State WTO Model, which is an applied partial equilibrium, multiple-commodity, multiple-region model of agricultural policy and trade. It is a gross trade model that accounts for exports and imports of each commodity in every region. The model does not break out a country/region's imports or exports by their origin or destination. The model is dynamic in that it allows for lags in adjustment over time in crop area, livestock production, dairy product production, and oilseed crushing. The base year is 2000. Base data on area, yields, production, consumption, stocks, and trade are drawn from USDA and country sources, including the USDA PS&D database. Tariffs and TRQs are based on the Agricultural Market Access Database (AMAD). Parameter values are drawn from the literature and other trade models, including the European Simulation Model (ESIM), the ERS baseline projections model, the Food and Agricultural Policy Simulator (FAPSIM), OECD's AGLINK model, and SWOPSIM. Adjustments were made to parameters in the process of testing the model and restrictions were imposed on the elasticities to ensure that requirements of economic theory were satisfied.

Twelve countries/regions are represented in the ERS/Penn State WTO model: the United States (US), European Union (EU-15), Japan, Argentina, Australia, Brazil, Canada, China, Mexico, New Zealand, South Korea and the rest of the world (ROW). The model covers thirty-five commodities:

- 11 crops (rice, wheat, corn, other coarse grains, soybeans, sunseed, rapeseed, peanuts, other oilseeds, cotton (both as a fiber and oilseed), sugar)
- 13 oilseed products (soybean oil and meal, sunseed oil and meal, rapeseed oil and meal, cottonseed oil and meal, peanut oil and meal, tropical oils, other oilseed oil and meal)

- 4 livestock products (beef and veal, pork, poultry, raw milk)
- 6 processed dairy products (cheese, butter and nonfat dry milk (as joint products), whole dry milk, fluid milk, and other dairy products).

Raw milk, fluid milk, and other dairy products are nontraded. The other 32 commodities are all traded internationally. The main commodities that are not included in the model are: sheepmeat, fruits and vegetables, processed foods, tobacco, protein crops, wine, and olive oil.

The core set of policies for all countries includes both specific and *ad valorem* import and export taxes/subsidies, tariff-rate quotas (TRQs), and producer and consumer subsidies. The US model includes loan rates for crops, marketing orders, and export subsidies for dairy products. The Japan model includes very high "mark-ups" for rice and wheat, which are treated like tariffs for this analysis. In this analysis, producer prices of beef and pork are maintained at base levels via increased deficiency payments; this is the current policy in Japan. Sugar is protected by state trading; this scenario assumes that sugar protection would continue. The Canada model portrays dairy policy as an adjustable production quota that targets producer prices.

The EU WTO Model includes intervention prices and export subsidies, variable import levies, compensatory payments, acreage set-asides (including the Blair House area limit on oilseeds), and base area bounds (which limit the total area of grains and oilseeds by reducing payments if the base area bound is reached), and production quotas for raw milk and sugar. We intend to include more blue box policies such as set-aside payments, livestock headage payments, and suckler cow premiums in the model for future domestic support reduction scenarios. Commodities in the ERS/Penn State WTO Model account for 75 percent of the EU's domestic support (figure 3).

The EU WTO Model will be used to evaluate domestic support alternatives for the EU, and to compare domestic support liberalization with tariff reductions. The model has several advantages over other models available within ERS (and at other institutions) for trade liberalization analysis, having been designed expressly for the purpose of analyzing trade liberalization options. Uruguay Round disciplined agricultural policies are modeled explicitly: tariffs and TRQs, export subsidies, and domestic support policies are all included in a transparent way. The model includes commodities that are considered important for further trade liberalization, such as dairy and sugar. All of the ERS/Penn State country models have the same structure, providing greater transparency and ease of manipulation. Compared to applied general equilibrium models, which were the primary models used in the recently-published ERS report analyzing trade liberalization options, the model has greater commodity disaggregation, and is country rather than region-specific (USDA, 2001). Most importantly, it captures specific policy instruments—individual domestic policies rather than expressing domestic support as a single measure, such as a price wedge, per-unit expenditure, or a PSE or AMS. This feature allows the analyst to translate domestic support liberalization into specific policy changes, which will be of greater interest to policy makers. It also distinguishes domestic support policies between amber box and blue box, allowing for scenarios of discipline on each separately.

The EU WTO Model in particular captures the linkages between domestic support policies and border measures, reflecting the real-world interdependence between import protection, domestic price support, and export subsidies. For example, the import levy for grains, which acts much like the old variable levy, but with a ceiling, is tied directly to the intervention price for grains.

Intervention prices and export subsidies are also linked directly—a reduction in the intervention price *ceteris paribus* reduces the gap between the internal market price and the world price, thus reducing the per-unit export subsidy.

Scenarios

The ongoing WTO round is likely to result in further cuts in export subsidies, domestic support, and tariffs. For this paper, three different scenarios are presented: in the first, intervention prices are reduced to world price levels, eliminating the need for export subsidies; the second scenario reduces intervention prices to world prices and eliminates all tariffs; and the third scenario builds on the second scenario, adding the elimination of the set-aside requirement. Comparing the results of these scenarios, one can determine the relative impacts of the different types of policy reductions.

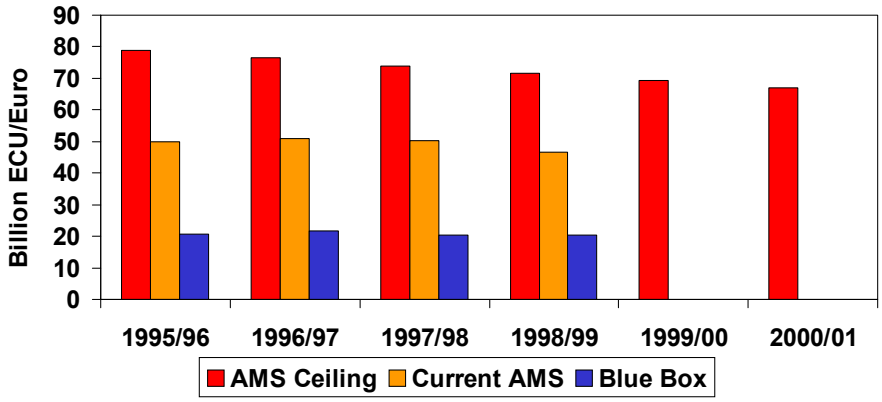
Intervention Price/Export Subsidy Elimination

For most commodities in the EU WTO model, intervention price support represents most of the amber box support. Reducing support prices to world market price levels will result in a near-elimination of amber box support for this group of commodities. The ongoing WTO negotiations on agriculture are likely to result in a reduction in permitted export subsidy use; many countries are also calling for their complete elimination. The EU is the largest user of export subsidies in both value and volume, accounting for 90 percent of all export subsidies notified to the WTO in 1998. According to its official notifications to the WTO of export subsidy use, the EU spent an average of $7.5 billion annually from 1995 to 1999 subsidizing exports. Over the same period, the EU's volume of subsidized exports averaged about 22 million tons a year plus 3.7 million hectoliters of liquids (wine and alcohol). From 1995 to 1998 the EU subsidized nearly all of its exports of coarse grains, butter and butter oil, beef, and skim milk powder. The majority of wheat and other dairy exports also required subsidies. The largest single EU export subsidy expenditure has been for beef, accounting for 21 percent of EU export subsidy expenditures from 1995 to 1999, although its expenditure share has been declining over time. Other commodities that have required large EU subsidy expenditures are other milk products (yogurt, ice cream, etc.), sugar, coarse grains, and incorporated products (processed products produced from other EU agricultural products). Grains have accounted for the majority of the EU's volume of subsidized exports, averaging 78 percent of subsidies from 1995 to 1999.

The EU could employ a number of options to limit or eliminate the need for subsidized exports. It could apply production controls such as production quotas to eliminate surplus production. Through the Common Agricultural Policy (CAP), the EU already employs production controls for arable crops, dairy, and sugar in the form of a mandatory land set-aside program, and quotas. Eligibility for direct payments is tied to acreage limits for arable crops, and herd size limits for beef. However, many producers dislike the existing production controls. Additionally, production controls would have to be very limiting in order to eliminate subsidized exports. The dairy quota would have to be cut by over 30 percent, as the majority of dairy products require subsidies for export. However, the EU dairy quota is currently in the process of being increased 2.4 percent due to the Agenda 2000 reforms. Therefore, it is doubtful that reducing production quotas would be a practical solution for EU export subsidy elimination.

If the EU elected to eliminate export subsidies without changing agricultural policies, it would build unmanageable stocks of beef, coarse grains, and dairy products. Building stocks is costly

Figure 2: EU AMS Ceiling, Current AMS, and "Blue Box"



Source: WTO Notifications

Figure 3: Commodities in WTO Model Account for 75% of EU Domestic Support 1/

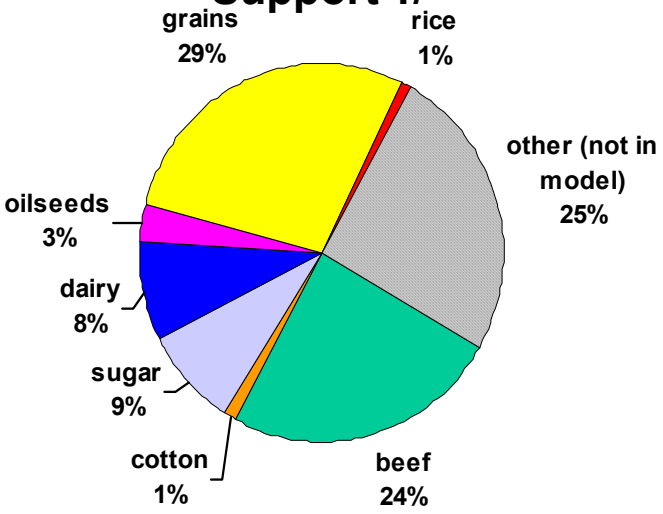


Table 1: Intervention Price/Export Subsidy Elimination

	World price	EU Price	Production	Feed Use	Base Exports	Scenario Exports	Base Imports	Scenario Imports
	[----------Percentage Changes----------]				[----------Million metric tons----------]			
Rice	0.4	-3.8	-0.2		0.349	0.068	0.782	0.500
Wheat	0.1	-3.3	3.3	3.9	14.881	15.748	4.000	3.217
Corn	0.6	-1.9	0.6	0.8	0.401	0.079	2.226	1.891
Other coarse grains	5.3	-15.0	-7.9	5.2	11.779	3.897	0.182	0.149
Soybeans	0.3	0.3	0.9				15.391	15.366
Soyoil	0.3	0.3	-0.1		1.204	1.220	0.052	0.052
Soymeal	0.2	0.2	-0.1	0.1	0.906	0.908	15.904	15.957
Sunseed	-0.2	-0.2	1.4		0.095	0.095	1.658	1.615
Sunoil	-0.1	-0.1	0.0		0.078	0.078	0.160	0.155
Sunmeal	-0.5	-0.5	0.0	0.0	0.021	0.021	1.134	1.133
Rapeseed	-0.5	-0.5	1.2		0.131	0.233	0.100	0.101
Rapeoil	-0.4	-0.4	0.1		0.438	0.442	0.056	0.056
Rapemeal	-0.5	-0.5	0.1	0.0	0.021	0.021	0.535	0.530
Tropical oils	0.3	0.3	0.6		0.080	0.080	3.919	3.909
Cotton	0.4	0.4	0.6		0.344	0.344	0.880	0.877
Sugar	2.1	-10.7	-2.2		7.173	6.087	1.847	1.847
Beef & veal	1.1	-7.1	-2.1		0.563	0.285	0.347	0.284
Pork	-1.2	-2.0	1.6		1.045	1.545	0.066	0.066
Poultry meat	0.1	-1.0	0.5		0.808	0.927	0.314	0.314
Raw milk		-15.2						
Butter	7.3	-24.5	1.6		0.166	0.133	0.130	0.112
Cheese	5.8	-14.8	-0.6		0.730	0.589	0.107	0.089
Non-fat dry milk	-1.3	-3.4	1.6		0.270	0.321	0.122	0.098
Fluid milk		-13.9	0.7					
Whole dry milk	5.0	-18.5	-6.0		0.574	0.497	0.028	0.022
Other dairy		-13.7	1.0					

Table 2: Removal of Intervention/Export Subsidies & Tariffs

	World price	EU Price	Production	Feed Use	Base Exports	Scenario Exports	Base Imports	Scenario Imports
	[----------Percentage Changes----------]				[----------Million metric tons----------]			
Rice	1.6	-26.3	-6.7		0.349	0.056	0.782	0.629
Wheat	0.8	-8.0	3.2	-1.5	14.881	18.515	4.000	3.241
Corn	9.3	-34.4	-12.2	72.9	0.401	0.057	2.226	29.261
Other coarse grains	6.5	-16.8	-6.2	3.9	11.779	5.713	0.182	0.150
Soybeans	3.9	3.9	4.5				15.391	15.178
Soyoil	4.4	4.2	-1.0		1.204	1.310	0.052	0.050
Soymeal	3.0	3.0	-1.0	-1.1	0.906	0.937	15.904	15.759
Sunseed	0.3	0.3	2.9		0.095	0.095	1.658	1.389
Sunoil	2.0	-2.4	-3.5		0.078	0.076	0.160	0.225
Sunmeal	-1.7	-1.7	-3.5	-1.1	0.021	0.021	1.134	1.178
Rapeseed	-0.3	-0.3	2.5		0.131	0.383	0.100	0.101
Rapeoil	0.2	-0.5	-0.3		0.438	0.444	0.056	0.057
Rapemeal	-1.0	-1.0	-0.3	-1.6	0.021	0.020	0.535	0.462
Tropical oils	1.8	-6.1	1.0		0.080	0.076	3.919	3.893
Cotton	3.0	3.0	2.1		0.344	0.344	0.880	0.867
Sugar	26.0	-52.6	-29.5		7.173		1.847	18.970
Beef & veal	10.1	-40.0	-21.6		0.563		0.347	2.065
Pork	-3.4	-5.8	7.3		1.045	3.737	0.066	0.066
Poultry meat	2.0	-8.9	7.5		0.808	1.731	0.314	0.314
Raw milk		-20.4	-2.8					
Butter	25.4	-44.6	-7.7		0.166		0.130	0.147
Cheese	8.0	-21.8	-1.1		0.730	0.644	0.107	0.090
Non-fat dry milk	1.6	-7.4	-7.7		0.270	0.151	0.122	0.099
Fluid milk		-21.1	0.0					
Whole dry milk	5.2	-20.3	1.2		0.574	0.581	0.028	0.022
Other dairy		-21.1	0.0					

Table 3: Removal of Intervention/Export Subsidies, Tariffs & Set-Aside

	World price	EU Price	Production	Feed Use	Base Exports	Scenario Exports	Base Imports	Scenario Imports
	[----------Percentage Changes----------]				[----------Million metric tons----------]			
Rice	1.1	-26.7	-2.3		0.349	0.056	0.782	0.557
Wheat	-1.1	-9.7	8.0	1.2	14.881	22.239	4.000	3.250
Corn	8.1	-35.1	-8.0	74.3	0.401	0.057	2.226	28.103
Other coarse grains	4.2	-18.7	-2.3	4.6	11.779	8.139	0.182	0.150
Soybeans	2.8	2.8	9.3				15.391	15.147
Soyoil	2.7	2.4	-0.9		1.204	1.315	0.052	0.051
Soymeal	2.2	2.2	-0.9	-0.4	0.906	0.929	15.904	15.916
Sunseed	-2.4	-2.4	7.4		0.095	0.092	1.658	1.265
Sunoil	-0.5	-4.8	-2.9		0.078	0.074	0.160	0.223
Sunmeal	-3.5	-3.5	-2.9	-0.2	0.021	0.020	1.134	1.194
Rapeseed	-3.7	-3.7	6.7		0.131	0.730	0.100	0.104
Rapeoil	-3.1	-3.8	0.2		0.438	0.436	0.056	0.058
Rapemeal	-3.6	-3.6	0.2	-0.2	0.021	0.020	0.535	0.513
Tropical oils	1.0	-6.8	1.0		0.080	0.075	3.919	3.892
Cotton	1.2	1.2	6.9		0.344	0.344	0.880	0.842
Sugar	25.5	-52.8	-29.4		7.173	0.000	1.847	18.917
Beef & veal	9.3	-40.4	-21.4		0.563	0.000	0.347	2.053
Pork	-4.1	-6.5	7.7		1.045	3.817	0.066	0.066
Poultry meat	1.3	-9.5	7.8		0.808	1.754	0.314	0.314
Raw milk		-21.0	-2.8					
Butter	24.8	-44.9	-7.7		0.166	0.000	0.130	0.147
Cheese	7.3	-22.3	-1.1		0.730	0.644	0.107	0.090
Non-fat dry milk	0.9	-8.1	-7.7		0.270	0.150	0.122	0.099
Fluid milk		-21.5	0.0					
Whole dry milk	4.5	-20.8	1.2		0.574	0.581	0.028	0.022
Other dairy		-21.6	0.0					