Abstract

Potential accession of a number of eastern and central European countries into the European Union (EU) seems destined to lead to further reforms of the Common Agricultural Policy (CAP). The financial costs of absorbing these countries may be extreme. This report documents the modeling framework (European Simulation Model, ESIM) used to analyze the 1992 CAP reform and discusses possible effects of EU enlargement.

Keywords: CAP Reform, European Union, EU, European Union Enlargement

Acknowledgment

Contents

Tables

Figures

Agriculture and European Union Enlargement

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Background[2] and Scope of the Study

Agricultural policies throughout Europe have undergone fundamental changes in the 1990's due to internal and external pressures. In the European Union (EU), internal budget pressures generated by the Common Agricultural Policy (CAP) combined with external pressure imposed by the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) negotiations to force a radical reform of its agricultural policy in 1992. The Agreement on Agriculture in the Uruguay Round of the GATT negotiations, signed in April of 1994, combined with the eventual enlargement of the EU to include Central and Eastern European countries (CEEC's), will likely force the EU to further reform the CAP later in the decade to meet its GATT commitments in agriculture and stay within acceptable CAP expenditure limits.

An even more radical change in agricultural policy occurred in many CEEC's when central planning was, in most cases, replaced by moves of varying degrees to a more market-driven agricultural economy. Production and consumption declined dramatically as subsidies were reduced or eliminated. To the extent that production can respond to the new market signals faster than consumption, the near future holds potential for surplus production and higher levels of exports from the CEEC's. Such a scenario is even more likely and would occur even sooner if the CEEC's, in anticipation of EU membership, adopt CAP policies and the associated higher guaranteed prices.

Three former members of the European Free Trade Association (EFTA), Austria, Finland, and Sweden, entered the EU-12 on January 1, 1995, making it the EU-15. By the year 2000 the present EU-15 could include 2 more EFTA countries (Norway and Switzerland) and 4 CEEC's (the Czech Republic, Hungary, Poland, and Slovakia, the CEEC-4), becoming the EU-21. An EU-21 would significantly affect the world's agricultural trading system under the present CAP.

Budgetary constraints in both the EU and the CEEC's probably will be a major obstacle to supporting agricultural policies in the EU for two reasons: compensation payments the EU agreed to pay farmers for reducing target prices and struggling fiscal budgets in the CEEC's. These budget constraints are particularly important in determining when and under what conditions the CEEC's will be integrated into the EU.

The new EU member countries (with the exception of Sweden) supported agriculture even more lavishly than the EU. Adoption of the CAP by these countries initially implied lower producer prices, suggesting lower production. Some of the EFTA countries changed their agricultural policies to adapt to the CAP in anticipation of EU membership or reformed their agricultural policies somewhat to adjust to budget realities.

These countries' populations and agricultural sectors are small compared with the EU, but, because of their high per capita income, they will be net contributors to the EU budget. Because of relatively low agricultural production levels, the newly integrated EFTA countries are not likely to negatively affect the CAP, but they could positively affect the agricultural sectors

of other EU member states as consumers increase demand in response to lower EU prices.

The EU signed association agreements with 10 CEEC's and discussed future EU membership with them. Most of these 10 CEEC's have either applied for EU membership or signaled their intention to do so. During 1996 and through June 1997, the EU held intergovernmental conferences to determine the many institutional and constitutional changes that must be made to cope with both recent and future enlargements. These changes, needed to make an enlarged EU politically workable, could be decisive for the implementation of conditions determining the feasibility of the CEEC's membership.

This report documents the modeling framework European Simulation Model (ESIM) used to analyze the 1992 CAP reform and EU enlargement, as well as the effects on agricultural production, consumption, and trade of the major commodities of interest to the United States in an EU-15 and/or an EU-21 under various scenarios where countries are integrated into the CAP during different time periods. The model also explicitly measures budget costs and gross farm income annually by commodity and by country grouping. Results from this modeling exercise framed the enlargement issues and provided some of the first estimates of the magnitude of budget costs implied by eastward enlargement of the EU for the EU Commission (Tangermann and Josling).

Since the end of the modeling exercise, events in the grain and beef markets evolved much differently than was assumed in the scenarios. Specifically, world grain prices moved above EU intervention levels, and revelations of a possible link between bovine spongiform encephalopathy (BSE, or mad cow disease) and a related human brain ailment, Creutzfeldt-Jakob Disease, resulted in large declines in beef and veal consumption in the EU. The model's results do not capture these events, which, if considered as temporary aberrations rather than as representing persistent structural changes, do not alter the validity of the basic thrust of the results. The ESIM model is policy-driven and provides information on the effects of alternative policy scenarios, assuming "normal" weather and that factors not explicitly modeled main-

tain their longrun equilibrium levels. The results presented in this report indicate changes that could occur under various policy scenarios, assuming that world prices return to their historical pattern below those prevailing in the EU. While the delay in publication of this monograph makes some of the results in the early years dated, the conclusions drawn from the results in later years are quite applicable.

Scenarios

Five principal scenarios represent various EU enlargement possibilities in the analysis. The scenarios are cumulative in the sense that higher numbered scenarios subsume previous scenarios. The scenarios are as follows:

Base scenario: CAP reform is imposed on the EU.[3] There is no enlargement and other countries (including the three EFTA countries that are now EU members) continue past policies. This scenario provides the baseline for evaluating the other four scenarios.

Scenario 1: Austria, Finland, and Sweden join the EU in 1995, making an EU-15.

Scenario 2: Norway and Switzerland join the EU-15 in 2000, leading to an EU of 17 countries.

Scenario 3: The four CEEC's included in the study, the Czech Republic, Hungary, Poland, and Slovakia, join the EU in 2000 to make a total of 21 countries.

Scenario 4: The CAP is further reformed in the period between 1995 and 2000 in order to "make room" for the new members.

Three additional mini-scenarios (**base-A**, **scenario 3a**, and **scenario 4a**) were analyzed. **Base-A** is the same as **base scenario** but with lower yield growth rates in the EU-12. **Scenario 3a** is the same as **scenario 3** with the important and feasible exceptions that the CEEC-4 do not receive compensation payments and are not required to set aside land. **Scenario 4a** is the same as **scenario 4**, except that the exogenously determined growth rate in crop yields (representing

[3] CAP reform is not discussed at length because its provisions are well known. Briefly, CAP reform included reductions in the intervention price of grains, and the introduction of set-aside and compensation payments.

technological improvements) is reduced relative to the rate prevailing under the other scenarios. This scenario is predicated on the assumption that lower prices will lead to lower research and development expenditures, hence reducing improvements in yield-enhancing technologies. The combination of lower prices and lower yield growth is critical in forecasting whether the EU can meet GATT commitments with the current CAP.

Commodity Coverage, Budget Exposure, and Farm Revenues

Commodities covered in the model include individual grains, individual oilseeds and products, sugar, rice, dairy products, individual livestock products, and important feeds such as manioc and corn gluten feed, as well as proxy index variables for other energy-rich and protein-rich feeds. While the coverage is not comprehensive, the modeled commodities represent a significant share of world trade in agriculture and more than 50 percent of EU agricultural budget outlays.

Farm income and budget constraints play particularly important roles in the final shape of agricultural policies in Europe. Therefore, an analytical framework is used to capture the effects of policy changes on the major components of the CAP budget and on farm returns of the EU and countries that aspire to accede to the EU. The task for policymakers and for analysts is an arduous one in the sense that changes in the CAP and world price movements have effects on production, consumption, trade, farm income, and the budget—all of which must be reconciled with the internal political dynamics of a rapidly widening and, consequently, more politically and institutionally complex EU.

A comparative-static analytical framework with the capability of generating results on an annual basis is used to assess possible EU actions on agricultural policy. The outcomes of the various scenarios, from which implications are drawn for world agricultural trade, are examined for political feasibility. Some changes may have to be made to the CAP if stocks, farm incomes, budgets, or trade are unacceptable to EU farm ministers, farmers, consumers, the EU Commission, finance ministers, and WTO trade partners.

The ESIM Model

ESIM (European Simulation Model), the model used for the analysis, is a SuperCalc-5 spreadsheet-based, multi-commodity, multi-regional, comparative-static, net-trade, partial-equilibrium policy model. This study focused on accurately modeling the agricultural and policy environment of the EU-12 and incorporating new and potential entrants.

ESIM contains 13 countries/regions and reproduces total world production and trade of the modeled commodities (table 1). Since the purpose of this study is to examine the effects of EU enlargement, detailed country and regional coverage is provided for the European countries now in the EU as well as potential entrants.

Commodity coverage is very extensive. The model contains 28, mostly temperate zone, agricultural products (table 2), mostly commodities that have received substantial support from the EU. Two are of special interest to the feed sector of the EU (and to U.S. exporters)—manioc (or cassava) and corn gluten feed.

The policy-driven model contains an extensive list of policy instruments that are used or could be used in the future by either the EU or potential entrants (table 3). Included in the model are commodity-specific policies (in 12 different categories), policies that affect all commodities, and non-commodity-specific exogenous variables such as the exchange rate and population and income growth rates. The modeling block representing the United States incorporates the major U.S. policies (before passage of the 1996 Farm Act) but these policies are not varied by scenario. The model is designed to run in a large-country mode where world prices are endogenous. Policy changes in the EU, a major producer, consumer, and trader of the commodities analyzed here, and EU enlargement are expected to affect world prices. Equilibrium in the large-country mode is attained when world prices adjust to the point where world net trade is zero for each year of the simulation.

The model can also be used in a small-country mode based on the assumption that world prices are exogenous. Under this assumption, one can examine the implications of domestic policy or production/demand

Table 1—Countries and/or regions in ESIM

EU-12 (Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, United Kingdom)
Austria
Finland
Norway
Sweden
Switzerland
Czech Republic and Slovakia (treated as one economy)
Hungary
Poland
United States
Other industrial countries
Former centrally planned economies (excluding those above)
Rest of world

conditions without feedback from world prices. The model was used in the small-country mode in ERS's baseline where world prices are given exogenously; the EU response to those prices is determined in that exercise.

The equations for the countries/regions are included in a single spreadsheet. Each country/region module in the model contains:

1) a policy block with parameters for the relevant policy instruments and the exogenous non-commodity-specific variables;
2) a behavioral equation block describing production, consumption, net trade, and domestic prices;
3) a financial calculation block where farm receipts and budget expenditures are calculated; and
4) an extensive parameter block (table 4).

Each country/region has an associated data file that contains time series data[4] on production, consumption, prices, and policy parameters for each of the modeled commodities. These data are used to initialize the model. The initialized or base model thus reproduces whichever year or average of years the

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[4] Data were obtained from USDA's electronic PS&D data base.

Table 2—Commodities in ESIM

Crops
> Wheat: common wheat, durum wheat
> Coarse grains: barley, corn, other coarse
>   grains
> Rice
> Sugar

Oilseeds and products
> Soybeans (meal and oil)
> Rapeseed (meal and oil)
> Sunflower (meal and oil)

Dairy
> Fluid milk
> Cheese
> Butter
> Skim milk powder

Livestock
> Beef and veal
> Pork
> Poultry
> Eggs

Other
> Manioc
> Corn gluten feed
> Other energy feeds
> Other protein feeds

Table 3—Policy parameters in ESIM

Commodity specific
> Compensation payments
> Deficiency payments
> Export subsidies
> Producer subsidies
> Consumer subsidies
> Input subsidies
> Tariffs
> Intervention price
> Threshold price
> Target price
> Target trade
> Production quotas

Non-commodity specific
> Set-aside rate
> Area slippage
> Small producer share of cereal/oilseed area

Exogenous variables
> Exchange rate
> Income growth rate
> Population growth rate

analyst thinks is representative for the analysis. This method of model initialization allows the analyst flexibility in choosing the appropriate base year to reproduce. Updating the model to a new base year as new data are collected is relatively easy. The results presented in this analysis for the EU-12 are based on a model calibrated with data averaged for the 1989-91 period.

Behavioral Equations

The model contains behavioral equations for production, human demand, and feed demand for each commodity in each country/region. Net trade is the balance of production and total use.[5] A two-way interaction through feeding links the crop and livestock sectors: demand for feed by the livestock sector affects crop prices and crop production, while crop prices

affect feeding costs, which help determine levels of livestock production.

ESIM is not a structural model, but an analytical framework where the behavior of economic agents is represented, in reduced form, by elasticity parameters that reflect adjustments to changing prices. The elasticity parameters were derived from a variety of sources. For the Eastern European and EFTA countries, they represent our best assessment following literature review and discussions with regional experts. Feed demand elasticities for the EU were provided by Jan Blom of Agricultural Economics Research Institute (LEI-DLO), the Netherlands, as a result of a cooperative agreement with ERS; area elasticities were generated by Martin Johnson, formerly with ERS; the remaining elasticities were obtained from ERS's US-EC Model. The elasticity parameters are assumed constant throughout the period of analysis, and behavior is modeled using double-logarithmic functional forms. The model is specified in real terms because all prices and exchange rates are deflated by the CPI.

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[5] As the model is used to analyze the longer-run implications of alternative policies, stock changes are not included in the model.

Table 4—ESIM schematic

	Policy block	Behavioral equations	Budget block	Parameters
Country 1:				
Commodity 1				
Commodity 2	Policy 1, policy 2...	Production, trade, demand	Export refunds, etc.	Elasticities
Country 2:				
Commodity 1				
Commodity 2	Policy 1, policy 2...	Production, trade, demand	Export refunds, etc.	Elasticities
Country n:				
Commodity 1	Policy 1, policy 2...	Production, trade, demand	Export refunds, etc.	Elasticities
Commodity 2				

The behavioral equations described are specific to the EU and new entrants upon entering the EU. Equation specification and policy parameters reflect the 1992 CAP reform, but do not include GATT commitments as binding constraints on EC policies, since one objective is to estimate the need for policy changes to meet these commitments.

Specification of Crop Production

Crop production is calculated as the product of area harvested times yield for the crops in all countries/regions of the model. Area harvested is a function of relative prices, while yield is a function of price and a technological growth rate based on recent historical trends and interviews with EU farmers.

For the EU, particularly because of CAP reform, area harvested for grains and oilseeds is not only a function of prices, but also a function of policy parameters. CAP reform reduced policy prices but provided compensatory payments to producers of grains, oilseeds, and protein crops; however, large producers (those with production above 92 tons) have to set aside a portion of their land in order to receive compensation payments for the price cuts. Thus, the model calculates the amount of area set aside for each of the relevant crops and the area harvested.

The sequence for calculating area harvested in the model is:

1) determine the desired area for each grain/oilseed crop based on relative prices and relative compen-

sation payments, assuming set aside area is not relevant;

2) adjust area allocation for grains to take into account small producers who do not have to set-aside land (we assume that oilseeds are produced only by large producers);

3) calculate set aside area for each of the grains and oilseed crops based on announced policy about the set-aside rate and adjustments for small producers and slippage; and

4) calculate actual area harvested for each crop as the difference between the desired area harvested and the area that is set aside.

Based on the description above, actual area harvested is a function of relative prices, compensation payments, and the set-aside rate. In reduced form, area harvested for grains/oilseeds can be represented as:

$$Ah_i = f(P_1,..., P_n, C_g, C_o, SAR, AS, SF)$$

where:

P_n = own and cross prices, 1,...,n includes common wheat, durum, corn, barley, other coarse grains, soybeans, rapeseed, and sunflower seed;
C_g = grain compensation payments;
C_o = oilseed compensation payments;
SAR = announced set-aside rate;
AS = area slippage rate; and
SF = small producer adjustment.

Matrices of price elasticities reflect homogeneity and symmetry requirements. Compensation payments are

assumed partially decoupled so they do not affect yield in the model although they do affect acreage, but the requirement to set aside land is assumed to affect yield. Yield per hectare of grains/oilseeds is:

$$Y_i = f(P_i, YS_i, T, SA\}$$

where:
Y_i = yield per hectare of grain/oilseed i;
P_i = price of grain/oilseed i;
Ys_i = yield slippage factor for grain/oilseed i;
T = productivity growth factor representing technological change; and
SA = set-aside area of grain/oilseed i.

Total demand for each crop product consists of three separable components: human demand, feed demand, and demand for seed. Feed and human demand are described more fully below. Seed demand is simply modeled as a function of harvested area. For oilseeds, demand is for crushing the seed into meal and oil; this crush demand is a function of relative oilseed prices and crush margins. Meal and oil are modeled as joint products with fixed coefficients, meaning a constant crush or extraction rate per unit of seed crushed.

Feed Demand

In modeling feed demand, the Organization for Economic Cooperation and Development's (OECD) Multilateral Trade Model (MTM) modeling approach was followed by specifying a separate feed-demand elasticity matrix for each livestock category.[6] Given prices, production of a unit of each livestock product is assumed to require a certain amount of each type of feed. These feed rates are not technical feed requirements, but are derived from a feed-utilization matrix and represent experts' assessment of how total feed demand for any particular feed ingredient is allocated across livestock products. Each feed rate is further assumed a function of relative prices as follows:

6 For a general description of the MTM model, see OECD, *National Policies and Agricultural Trade*, Paris, 1987, pp. 136-185. The feed demand component used in the MTM model and assumed elasticities are described in more detail in OECD document DAA/1926-TD/85.262, Paris, September 17, 1985.

$$FR_i^j = f(P_1, \ldots, P_K)$$

where:

FR_i^j = feed rate for feed input i going to livestock j; and

$P_i, \ldots, P_K$ = prices of feed inputs (k = 12).

Livestock prices are not a factor in determining feed rates. Expansion or contraction of livestock production, although affecting total feed demand, does not affect feed per unit of output, whereas a change in relative feed prices does affect the feed rate. Feed prices influence livestock production in the model through feed costs per unit of livestock production.

Twelve feed ingredients are included in the model, so each livestock category contains a 12 x 12 elasticity matrix, resulting in 144 elasticity parameters for each livestock product. Since 5 livestock categories were included in the model, a total of 720 feed-demand elasticity parameters were required. Some elasticity parameters are zero because not all feed ingredients are fed to each livestock category. In addition, symmetry and homogeneity are imposed, which reduces the number of elasticity parameters needed.

Total feed demand for feed ingredient i is:

$$TF_i = \sum_j (FR_i^j * Lv_j)$$

where:

TF_i = total feed demand for feed ingredient i;

FR_i^j = feed rate for feed input i going to livestock j; and

Lv_j = production of livestock j.

Livestock Production

In the livestock sector, production is a function of the relative prices of livestock commodities, feed costs, and exogenous technological growth rates as follows:

$$Lv_j = f(P_1, \ldots, P_k, FC_j, T)$$

where:
Lv_j = production of livestock j (j = 1, 2,..5);
$P_1, \ldots, P_k$ = prices of livestock commodities;
FC_j = feed cost of livestock j; and
T = productivity growth factor representing disembodied technological change.

Feed cost per unit for each livestock commodity is a function of feed rates and feed prices as follows:

$$FC_j = \sum_i (FR_i^j * P_i)$$

where:

FC_j = cost index of feeding livestock j;

FR_i^j = feed rate for feed input i going to livestock j; and

P_i = price of feed ingredient i (i = 1,2, . . .12).

Interactions between the crop and livestock sectors are achieved through feed-demand and feeding-rate relations. Feed prices affect not only the composition of the feed mix, but also the production of livestock products. Thus, not only are the substitution and complementary effects of changing relative prices and shifts among feed ingredients represented in the model, but the expansion or contraction effects on the livestock sector are also captured by changing feed costs.

Consumption Demand

Human demand for goods is a function of relative product prices, population, and income:

$$D_i = f(P_1, P_2, ... P_m, Pop., Inc.)$$

where:
D_i = demand for product i;
$P_1, ... P_m$ = own and cross prices of goods;
Pop. = population growth rate; and
Inc. = income growth rate.

Matrices of price and income elasticities reflect homogeneity and symmetry requirements. For each commodity in the model, net trade is the difference between production and total demand:

$$NT_i = PROD_i - TD_i$$

where:

NT_i = net trade;
$PROD_i$ = production (area times yield); and
TD_i = total demand (feed plus human plus seed).

In addition to determining production, consumption, and net trade, the model calculates the financial implications of various policy options, with a focus on calculating financial returns to growers through market operations (farm receipts) and the public budget implications of export refunds and compensation payments.

Policy analysis is undertaken by changing the policy block described above. The policy block for any country/region or group of countries/regions can be changed directly in the model file (if the model is run for only 1 year), or one can use the special programming file which contains the macro and policy data files to perform policy analysis (if the model is run for a sequence of years). A set of policy files with policy assumptions up to the year 2005 was developed for each of the 5 EFTA countries, each of the 4 CEEC countries, and for the EU-12. Special programming macro files simulated the model for a sequence of years (up to 2005) or for any one year of interest.[7]

Policy files for the EU accession candidates were prepared so that both the year of accession and the period during which candidates' policies are aligned with those of the EU can be specified. Acceding countries' decisions on adoption of production quotas (for milk and sugar), compensation payments, and set aside may also be specified in the model.

The rest of the report presents the results of the various scenarios described above, organized to highlight the effects of the various scenarios on the EU-12 and on the accession candidates.

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[7] The model is available from the authors upon request.

EU-12 Market Balances Under 1992 CAP Reform and EU Enlargement

Our period of study, 1989-2005, includes the incorporation of Austria, Finland, and Sweden into the EU, as well as the likely incorporation of the Czech Republic, Hungary, Poland, and Slovakia (the terms Visegrad-4 or CEEC-4 are used interchangeably to refer to these countries) at the turn of the century. The principal assumption affecting scenario results for the EU-12 is the implementation of 1992 CAP reform, which we do not discuss at length because its provisions are well known. Among major commodities, dairy and sugar production quotas preclude scenario effects, while the EU's relatively minuscule rice production was materially unaffected by 1992 CAP reform. The dairy herd, however, is considered because it affects feed demand, and the price of butter is cut by 2.5 percent as stipulated by CAP reform.

The assumption that undergirds scenarios 1-3 is that the CAP does not change as new entrants join the EU. Only in scenario 4 are policy prices reduced to simulate a policy response intended to mitigate the budgetary impacts of CEEC-4 membership. In addition, reactions to GATT commitments on import access and export constraints are not incorporated into the analysis. Nevertheless, the results are compared to likely GATT commitments to see what EU commodities are affected. Lower policy prices and lower yields are then discussed where GATT constraints are exceeded.

The most important developments that occur in the EU-12 as a result of EU enlargement revolve around the budget costs of incorporating the CEEC-4 into the EU (scenario 3). Incorporating the EFTA countries into the EU (scenarios 1 and 2) has little effect on the EU-12. Here various policy scenarios and technology developments, examined in the EU-12 context, might allow the EU to absorb the CEEC-4 without depleting the budget. In scenario 4 (further CAP reform scenario), EU policy prices, in real terms, are arbitrarily reduced by 5 percent from 1997-1999 and then reduced again 1 percent annually to the year 2005. Because of lower prices, the yield growth rate for most field crops in scenario 4a is reduced by 1.7 percent annually from 1995 through 2005.

Grains

The primary force driving grain production from 1989-2005 is CAP reform, which brought lower grain prices and invoked land set-aside. Grain production in the EU-12 is affected little by the different enlargement scenarios (table 5). Results from all scenarios are presented but the contrast between the base scenario and scenario 4 is emphasized.

While lower prices and discrimination between large and small producers in the reformed CAP is argued by some as inducing technological change, enlargement is not assumed to affect technological progress in the EU-12 in the model. Consequently, yield growth for each grain continues at a constant, pre-determined[8] rate through time, just one possible assumption made in the model. The effects of CAP reform on future research expenditures and on yield developments are difficult to know. One possible outcome of lower prices, slower yield growth due to less technical progress, is shown in scenario 4a.

In the base scenario, total EU-12 grain production in 1995 is about 5 percent below the base period production level (average of 1989-1991) because of lower prices and the implementation of land set-aside due to CAP reform (table 5).[9]

By the year 2000, grain production recovers despite lower prices and land set-aside because of the offsetting effect of yield growth due to technological progress. Total grain production is about 5 percent higher than the base period level and 10 percent above 1995 levels.

Grain production for the years 2000-2005 in the base scenario continues to increase, and in the year 2005 is 15 percent above the base period level, even though the assumptions that prices are lower and set-aside continues at the original CAP reform rate of 15 per-

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[8] In response to CAP reform, the yield growth rate for most grains was reduced below the historical trend but was not adjusted further during the simulation period.

[9] Actual grain output in 1995 was about 2 percent higher than indicated by the model, primarily because actual producer prices fell less than the announced reductions that were used in the model.

Table 5—EU-12 grain production, consumption, and net trade under alternative scenarios from 1989/91 to 2005

Year	Base scenario	Scenario 2	Scenario 3	Scenario 4
		Million tons		
Production				
1989/91	173.20	173.20	173.20	173.20
1995	164.63	164.63	164.63	164.63
2000	181.15	181.10	181.04	177.56
2005	198.79	198.79	198.71	194.55
Consumption				
1989/91	148.70	148.70	148.70	148.70
1995	159.11	161.49	161.36	161.46
2000	161.94	164.19	161.66	163.58
2005	162.52	165.23	162.56	164.14
Net trade				
1989/91	24.51	24.51	24.51	24.51
1995	5.53	3.17	3.17	3.19
2000	19.21	16.83	19.33	13.98
2005	36.27	33.45	36.53	30.41

Source: European Simulation Model

cent are maintained. Throughout the model, productivity growth overwhelms the effects of policy changes (lower prices and land set-aside) instituted early in the simulation period and adds an additional 34 million tons of grain to the base period level at the end of the 10-year period in 2005 for all scenarios except scenario 4.

Results for scenarios 1 and 2 follow a pattern almost identical to the base scenario, not surprising because the EFTA countries are not large enough producers to affect the EU-12 market balances, and grain production is driven by CAP policy prices, which are not adjusted in these scenarios.

Wheat production in 1995 for the EU-12 in the base scenario is 6 percent below the base period (1989-91) level but by the year 2005 is 15 percent above the base period level. These results are more optimistic than some other studies regarding the effectiveness of CAP reform. For example, these ESIM results suggest that by the year 2000 wheat production is almost 90 million tons, whereas a recent OECD report places wheat production around 98 million tons, about 9 percent higher. Wheat production results in ESIM (with

the exception of scenario 4) reach 98 million tons 5 years later, in 2005.

Lower prices brought about by the 1992 CAP reform induce greater domestic use of grain. In 1995, total grain use is about 7 percent above utilization during the base period, but total use increases only moderately (2.1 percent) during the rest of the simulation period. By the year 2000, total use is 9 percent higher than in the base period, and in 2005 it is 12 percent higher. The relatively modest growth in total use is attributed to modest population and income growth, a slight decline in real feed prices, and a relatively stagnant livestock sector (table 6).

The combination of lower grain output and higher domestic use early in the simulation reduces EU-12 grain exports in the base scenario. Model results indicate that total net grain exports in 1995 are down to about 6 million tons, not including exports sourced from stocks. Yet the relatively strong rebound in production and slow growth in domestic use lead to increasing EU-12 grain exports in the following years. By 2005, net grain exports, about 36 million tons, are 48 percent above the base period. Net exports of

Table 6—EU-12 meat production, consumption, and net trade effects under alternative scenarios, 1989/91-2005

Year	Base scenario			Scenario 3			Scenario 4		
	Beef	Pork	Poultry	Beef	Pork	Poultry	Beef	Pork	Poultry
					Million tons				
Production									
1989/91	8.15	13.87	6.49	8.15	13.87	6.49	8.15	13.87	6.49
1995	7.90	14.11	7.03	7.93	14.52	7.10	7.93	14.52	7.10
2000	8.26	14.41	7.60	8.25	14.03	7.71	7.95	13.97	7.71
2005	8.61	14.37	7.82	8.60	13.92	8.09	8.29	13.87	8.02
Consumption									
1989/91	7.52	13.36	6.17	7.52	13.36	6.17	7.52	13.36	6.17
1995	8.10	13.60	6.72	8.12	13.56	6.71	8.12	13.56	6.71
2000	8.38	13.91	7.29	8.37	13.99	7.26	8.69	13.92	7.30
2005	8.43	13.86	7.51	8.42	13.97	7.43	8.74	13.89	7.49
Net trade									
1989/91	.63	.51	.31	.63	.51	.31	.63	.51	.31
1995	-.20	.51	.31	-.20	.96	.39	-.20	.96	.39
2000	-.13	.51	.31	-.12	.03	.46	-.74	.05	.42
2005	.18	.51	.31	.18	.06	.66	-.44	-.02	.53

Source: European Simulation Model

wheat increase from 6 million tons (not including exports sourced from stocks) in 1995 to 25 million tons in 2005; coarse grain net exports increase to 11 million tons during the same period. This pattern holds in all scenarios except in scenario 4 where exports are lower.

These results suggest that the EU-12 will have difficulty meeting its GATT commitments for grain exports beginning around the year 2001 unless additional policy changes are made. These results are similar to those generated by other models. For example, the OECD projects that in 2000, EU-12 net wheat exports will be about 28 million tons, assuming the EU-12 maintains 12 million tons in stocks. Our model (which also assumes constant stocks, which in turn explain low 1995 exports) returns more optimistic results regarding the effectiveness of CAP reform, and indicates wheat exports of 15 million tons in 2000.

Scenario 4 generates expected results—lower grain prices lead to lower output, higher feeding rates, and lower exports relative to the base scenario. In 2005, wheat production is 3 percent lower than in the base

scenario, while barley and corn production are 2 percent below base scenario levels. Total domestic use expands as a result of lower prices, mainly due to an increase in feed demand. Consequently, EU-12 exportable surpluses decline relative to the base scenario.

Net wheat exports of 12 million tons in 2000 in scenario 4 are below EU-12 GATT commitments. However, export surpluses build up quickly and, although lower prices result in lower exports in 2005 relative to the base scenario, EU-12 wheat exports rise above GATT commitment levels of 16.3 million metric tons for wheat and 8.1 million metric tons for coarse grains. For example, in 2005, EU-12 wheat exports reach 20 million tons and coarse grain exports are about 10 million tons in scenario 4.

EU-12 budget costs are lower in Scenario 4, which leads to slightly higher compensation payments, but total budget expenditures on grains decline, mainly because of lower export refunds resulting from lower exports. In scenario 4, export refunds fall almost 77 percent in 2005 relative to the base scenario. Total budget expenditures for grains are 9 percent less than

in the base scenario. Scenario 4, although beneficial for EU-12 consumers, taxpayers, and livestock producers because of lower grain prices and lower budget expenditures, adversely affects grain producers. Farm receipts for grain producers are 12 percent lower than in the base scenario in 2005. In this case, only compensation payments and export refunds are taken into account for budget expenditures—intervention buying, storage payments, and structural funds are not accounted for here.

The results suggest that CAP reform, as modeled, is insufficient to meet GATT commitments in the latter part of the simulation period even with significantly lower prices and lower than historic yield growth rates. The additional 10-percent price cut represented by scenario 4, although helpful in moderating budget pressures, is not sufficient to solve the problem of meeting GATT export restrictions. Therefore, further EU policy adjustments would have to be introduced.

One of the key parameters embedded in the analysis, as suggested above, is productivity growth, reflected in the model by annual yield increases. The results presented above assume that productivity growth is not affected by CAP reform.[10] However, research and development (R&D) expenditures may fall because of CAP reform, adversely affecting yield growth in the future. Additionally, some argue that the emphasis of future R&D will no longer focus strictly on yield-enhancing technologies, but will shift to quality and/or environmental considerations.

These considerations are incorporated in the analysis through changes in future yield growth rates assumed in scenario 4a. Current technology in the pipeline is assumed to continue; hence, early in the simulation period, yield growth does not change from current trends. Less R&D is assumed, which is reflected in slowing yield growth by 1998. Yield growth for rapeseed is not lowered from initial levels to reflect recent developments in hybrid seeds.

Starting in 1998, the yield growth rate for grains and oilseeds is assumed to decline by about 1.7 percent

per year, so that, by 2005, annual yield growth is 11 percent below the yield growth in the base scenario (from 2.09 percent to 1.85 percent). In order to discern the effects of the assumed lower yield growth on supply and distribution, the base scenario was run again with the lower yield growth rates and the results are referred to as base-a.

Total grain production in the year 2005 is 3 percent less in base-a than in the base scenario. Total use is affected little, but the lower output reduces net exports in base-a compared with the base scenario. For example, wheat exports are 14 percent less and coarse grain exports are 27 percent less in base-a than in the base scenario. But even with the lower assumed yield growth, EU-12 wheat exports, at 21 million tons, are above the subsidized export levels (16.3 million tons) permitted under GATT. Lower yield growth rates reduce grain surpluses somewhat, but not sufficiently. Results suggest that even when CAP reform is assumed to result in moderation of future yield growth, the EU-12 will still produce more than can be exported with subsidies under GATT commitments.

The assumption that CAP reform induces technological changes that moderate the outward shift of grain supply schedules is beneficial to the budget. Primarily because of reduced export refunds, budget expenditures for grains in base-a are about 4 percent below the base scenario. However, lower output leads to reduced marketing, and the net result is about a 2-percent fall in total receipts for grain producers.

The combination of lower prices and slower yield growth (scenario 4a) leads to further reductions in grain output and considerably lower supply available for export. In the year 2005, total grain output is 3 percent below scenario 4 and 5 percent below the base scenario. Lower grain prices result in about 4 million fewer tons of grain produced, while lower yield growth eliminates an additional 6 million tons. In scenario 4a, net wheat exports in 2005 are about 18 million tons, almost 28 percent below the exports in the base scenario. In this case, the EU-12 is considerably closer to meeting GATT commitments on subsidized wheat exports. These results suggest that the

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[10] Yields do respond to lower prices—only the technical element in yields is assumed exogenous.

EU-12 will experience difficulties meeting GATT commitments early in the next decade unless:

1) CAP reform induces technological changes that moderate the growth in grain yields;
2) further price cuts are instituted; and
3) the 15 percent set-aside is retained.

The international grain-exporting community is not the sole beneficiary of the EU's pursuing a policy of lower prices that slow yield growth. Benefits also accrue to EU consumers, livestock producers, and taxpayers. Budget expenditures on grains are 9 percent less in scenario 4a than in the base scenario, primarily because export refunds decline by 90 percent. This policy, however, adversely affects grain producers as farm receipts are about 13 percent less than in the base scenario.

Oilseeds and Oilmeals

Imports of oilseeds by the EU-12 first increase by 3 million tons over the base period to the year 2000 then remain relatively stagnant through the year 2005 in the base scenario. Oilmeal imports into the EU-12 suffer a sharp decline throughout the 10-year period in all scenarios. Forces on the production and consumption side simultaneously bring this about. On the production side, additional output of rapeseed and sunseed on set-aside land along with technical growth of EU-12 oilseed yields results in expanded domestic availability. On the demand side, the following forces are operating to lower demand: a smaller dairy herd, a slightly higher price for oilmeals, greater feeding efficiency, lower pork production, and lower prices for meal substitutes in feeding—grains and corn gluten feed (CGF).

Very little change other than technical growth factors occurs in rapeseed and sunseed production in all scenarios in the EU-12 because of limitations, imposed by the Blair House agreement, on the area planted to oilseeds. Oilseed acreage is limited to 4.36 million hectares but the agreement allows the EU to grow oilseeds, for industrial use, equivalent to 1 million metric tons of soymeal on set-aside land. The agreement thus allows the EU to produce a significant amount of oilmeals derived from extrusion of the oil

that can be used only for industrial purposes. However, since the EU reaches the maximum level of 1 million tons of soymeal equivalent in all scenarios, the Blair House agreement's effects are not a factor in determining production differences between scenarios.

Livestock Markets

Livestock and livestock products are politically sensitive in the EU-12 because of CAP budget costs and the large number of small livestock producers with strong political connections. Grain producers are also affected in part because meat exports are another way of exporting EU grains. The demand for grain from the livestock sector will greatly affect

1) the amount of grains available for sale on the world market,
2) the size of the grain stockpiles in the EU-12, and
3) the EU-12 budget.

The prices of inputs and outputs in the feed/livestock sector under different scenarios will determine to a great extent the competitiveness of EU and CEEC production and hence the trade between the two regions and with the rest of the world. The most relevant scenario to examine is scenario 3, in which the CEEC-4 join the EU.

The most important commodity effects caused by CEEC-4 accession to the EU for the EU-12 is the fall in pork production and exports, the increase in poultry production and exports (table 6), and the negative effect on feed demand. Inclusion of the CEEC-4 into the EU exerts downward pressure on pork prices in the EU-12 because of the increased supply in the CEEC-4 resulting from higher prices when the four countries are admitted to the EU. However, for EU-12 pork producers (and consumers), prices are lowered, which reduces production and expands consumption, thus reducing export availability. EU-12 pork production, in 2005, is 450,000 metric tons less in scenario 3 than in the base scenario, while consumption is slightly higher, resulting in the EU-12 reducing exports from 500,000 tons to about 6,000 tons. These results will be discussed in more detail below, but it appears that CEEC-4 countries have a relative advantage in pork production and there is a

moderate eastward shift in the location of pork production in the expanded EU.

With enlargement forcing pork production down (scenario 3 vs. the base scenario) and poultry production up in the EU-12, total feed demand in the EU-12 is lower in scenario 3. A primary reason is that pork production requires about 60 percent more feed per pound produced than poultry. As a result, the model projects the EU-12 will feed fewer grains and meals after the CEEC-4 join the CAP, which leads to larger EU-12 grain exports and smaller oilmeal imports.

In contrast to pork, poultry production increases in the EU-12 as a result of CEEC-4 accession. Poultry producers experience a slight increase in the producer price with scenario 3 relative to the base scenario, which leads to expanding poultry production, decreasing consumption, and larger exports. By the year 2005 in the EU-12, as a result of CEEC-4 accession, poultry production is 3-percent higher, consumption is slightly lower, and exports are 660,000 tons, more than double those in the base scenario. These results do not indicate that CEEC-4 accession leads to an increase in relative advantage in poultry production by the EU-12. Instead, these exports are facilitated by the use of export subsidies.

The sensitivity of pork and poultry exports to relatively small percentage changes in the production and consumption sectors clearly demonstrates how volatile and unanticipated EU-12 exports can be. The CEEC-4's entrance into these markets dramatically affects the EU-12's export market, which has been the residual market for EU-12 overproduction. The significance of these results is of particular importance to world markets because

1) the EU could export more pork and beef under the Uruguay Round constraints if EU prices were allowed to drop to world levels because of low-cost producers in the CEEC's, and
2) the political fallout in the EU-12 regions, where farmers are unable to compete with low-cost CEEC production, could provoke a revisit of CAP reform.

The whole story cannot be told within the confines of any single livestock product. The CEEC-4 produce,

consume, and trade all livestock products and will face different input costs and output prices for their products if they come under the CAP. Competition from the CEEC-4 would have serious political consequences for the CAP because traditional producers of northern products such as pork and beef in the EU-12 would likely see their profit margins squeezed or would be forced out of business. The likelihood of this occurring appears strong given the results of the model and the fact that labor costs are lower in the CEEC-4 than in the EU-12, giving them a further advantage in livestock production, particularly in pork production. However, the EU's legislative barriers to the production of pigs, environmental requirements and licensing, could prevent some farms in the CEEC-4 from producing pigs once they are members. The CEEC-4 countries have requested funds from the EU to invest in infrastructure that would allow them to comply with EU regulations. A timetable for compliance with EU regulations by CEEC-4 farms could provide the EU-12 with a valid base from which to extend the same assistance to EU-12 farms that would be rendered unprofitable by CEEC-4 competition.

Summary

Under any scenario, the EU will violate the export provisions of the Uruguay Round agreement in cereals if it maintains its current policy system. This conclusion is reached even with the assumption that the EU will continue its set-aside rate at 15 percent, established by the 1992 CAP reform. The EU, in response to higher world prices, reduced its set-aside rate to 10 percent for the 1994/95 season and lowered it further to 5 percent for the 1995/96 and 1996/97 marketing years, and may even reduce it to zero, which would create surpluses sooner and larger than predicted by the model results. However, with high world prices in 1996 and 1997, EU export subsidies are greatly reduced, avoiding potential problems in the EU's ability to meet its GATT commitments in the near term.

What seems clear in the medium term is that the CAP will have to be re-reformed in order to incorporate the Visegrad-4 countries into the EU. This will entail very difficult political decisions because of:

1) the tight budgetary situation created by macroeconomic policies in the run-up to the creation of the single currency;

2) the need to mollify current EU farmers whose livelihoods and incomes will be threatened by competition from low-cost producers in Eastern Europe; and

3) equitable treatment of farmers in East and West Europe regarding compensation payments, set-aside land, quotas, and national aids.

In addition, the countries of Eastern Europe will likely drive a hard bargain in the negotiating process because agriculture plays such a large role in their economies and especially the political life of their countries. These issues and proposals for solutions will be discussed below.

The Impact of EFTA Accession

Introduction

On January 1, 1995, the European Union (EU) was enlarged to include Austria, Finland, and Sweden, formerly members of the European Free Trade Association (EFTA). The governments of these countries successfully negotiated with the EU the terms of membership, and their electorates had given their approval in national referenda. A fourth EFTA country, Norway, also negotiated the terms of accession for membership, as it had in 1972 when the United Kingdom, Denmark, and Ireland joined, but the voters once again rejected the proposed accession.

This section discusses the impact of the enlargement to include the three new member states, describes the importance of agriculture in these countries, details the issues faced in the negotiations and their resolution, indicates the implications for agriculture of the accession of three countries, and discusses possible options for two of the members of EFTA, Norway and Switzerland, that have not yet joined the EU.

The EFTA and Agricultural Trade

In July 1956, at a time of intensive negotiations on the future trade relations in post-war Europe, the UK suggested the formation of a free-trade area (FTA) for all the countries of Western Europe. The FTA would have included the six eventual founding members of the European Economic Community, France, Italy, Belgium, West Germany, the Netherlands, and Luxembourg, known as the Six. The Six were not convinced that a mere free-trade area would be satisfactory; such an area did not hold out the promise of the closer political relationships that they sought, particularly between France and West Germany. Moreover, the six distrusted the UK's insistence that such an FTA exclude agriculture (to preserve the benefits of Commonwealth Preferences for their overseas suppliers) and they continued the negotiations that lead to the Rome Treaty.[11]

Several other countries, including Greece, Turkey, and Iceland, were also wary of the notion of a free trade area. But the UK and six other countries, Norway, Austria, Switzerland, Sweden, Portugal, and Denmark (the Outer Seven), pursued the FTA option, leading to the signing of the Stockholm Treaty of 1960 and the formation of the European Free Trade Association (EFTA).

The Stockholm Treaty was heavily influenced by contemporary British trade policy. To avoid any threat to imports of agricultural products from the Commonwealth, the British government argued for the exclusion of these products from the Agreement. The Stockholm Treaty therefore contained an explicit statement that the trade liberalization provisions would not apply to agriculture and to fisheries (Articles 21 and 26). Though the original reasons for this exclusion are no longer relevant, the legacy still remains; EFTA was always an incomplete free-trade area because it omitted these two important sectors of the economy.

Yet some bilateral arrangements made between Denmark and the rest of the EFTA facilitate the export of farm products. The UK also agreed to allow some imports of fish products from EFTA partners, subject to minimum-import prices, in the late 1960's. Some duties on agricultural products were bound in 1966 and market access improved in 1971, but EFTA was never willing or able to tackle the agricultural anomaly.

The result of this hands-off treatment of agriculture was the development of a series of national markets in the EFTA countries behind high border protection and extensive price supports. Trade among the Nordic countries in agricultural products has been lower than might be expected, given their common borders and cultural ties.[12] Trade between these national markets and the former European Community (EC) countries has also been much less than the logic of relative factor endowments would suggest. This situation is likely to change markedly by membership in the EU.

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[11] For a discussion of this period see Michael Tracy, *Government and Agriculture in Western Europe, 1880-1988*, Harvester Wheatsheaf, 1990.

[12] Austria and Switzerland, however, both have longer borders with Italy and Germany than with each other. Agricultural trade between Austria and Switzerland is not and may never be extensive.

The decision to exclude agricultural goods was made at the time when a series of bilateral trade pacts developed among the EFTA countries and the EC, following the movement of the UK and Denmark from EFTA to the EC in 1973. Given former EFTA members' reluctance to re-erect trade barriers among former EFTA members, negotiations for a free trade agreement between the former EFTA partners and the EC looked probable, but in agriculture and fisheries the issue did not arise. No new barriers were erected on farm products as no preferences were eroded. Swiss farm exports, for example, were not allowed free access into the UK market under EFTA rules, so they suffered no loss with UK accession to the EC. It was the UK's Commonwealth Preference system, rather than EFTA preferences, that had to adjust most in the area of agricultural trade when the UK joined the EC.

Whether the EC-EFTA bilaterals could have included agriculture is uncertain. The EC had by that time developed the Common Agricultural Policy, which coupled trade liberalization within the EC with a restrictive system for controlling third-country imports. The protectionist face of the CAP toward third countries was not the main problem. Austria, Sweden, Norway, Switzerland, Finland (made a full EFTA member in 1969), Iceland (which joined in 1970), and Portugal all had restrictive regimes for farm trade. The difficult issue would have been trade within the EC-EFTA bloc, rather than with third countries.

EFTA countries could hardly have been expected to have adopted the CAP; the loss of control of rural policy, seen as crucial to national security and social policy in several of these countries, was too much to expect of nonmembers. The full set of regulations governing agricultural marketing, together with a sharing of the financial burden and the need to harmonize prices, would have been too much to impose on the EFTA countries. But without some fairly extensive revision of EFTA policies in this area, intra-European free trade in farm products would have been out of the question.

The ambitious plans laid in 1985 by the EC to "complete the domestic market by the end of 1992" posed a problem for EFTA. The economic case for being inside this large internal market was compelling, yet the political difficulties of membership, in particular the issue of neutrality and the opposition of the Soviet Union, argued for staying outside. As a response to this dilemma the EC developed the notion of a European Economic Area (EEA) which would include both the EC and EFTA, where trade in goods and services could be free and where factors could move without restriction. The talks aimed at establishing an EEA took the same approach on agriculture as in the earlier bilaterals. Rather than open up the question of trade in agricultural products, both the EC and EFTA agreed that it be left off the table. This decision was questioned by Spain, which would have gained from better access into the affluent nations of EFTA for Mediterranean products. But rather than open up the whole "can of worms," participating countries decided to avoid the issue.

Agriculture was, as a result, among the very few sectors that were not already closely integrated between EC and EFTA.[13] A series of preferential quotas was included in the EEA, which only served to highlight the current fragmented nature of the market for many agricultural goods in EFTA.[14] Agriculture plays a small and diminishing part in the EFTA economies. It was politically easy, and feasible from an administrative perspective, to rule all farm trade beyond the scope of the free trade provisions of the EEA.[15]

The long-term economic viability of such a decision was always in doubt. As the impact of integration began to be felt, many imagined potential anomalies that could have called the decision into question. These problems were likely to arise most clearly through developments in the European food industry. Unlike the small size of the farm sector, the food industry of the EFTA countries is one of the largest in the European economy. This industry is undergoing a

[13] Fisheries is another sector where EFTA-EC trade is not subject to common rules.

[14] The quotas allowed limited tariff-free access to a number of fruits and vegetables along with some cheese, processed meats and cut flowers. See USDA/ERS, *Western Europe Agriculture and Trade Report 1992*, p. 82, for details.

[15] This did, however, compromise the position of EFTA and the EEA within the GATT. Article XXIV of GATT states that a free trade area must cover essentially all trade.

process of rapid adjustment, including internal structural change, and closer integration among countries, leading the food industry to increase pressure for the removal of anomalies that prevent these firms from seeking the cheapest source of supply for raw materials in a competitive European food market.[16]

Negotiations for Membership

Whether or not the EEA was a satisfactory solution to the fragmentation of the European agricultural market was never tested. Events in the late 1980's and early 1990's overtook the EEA, as first Austria and then Finland and Sweden announced their intention to apply for membership in the EC, encouraged in particular by the fall of the Berlin Wall and by the weakening of the longstanding neutrality argument against membership. Norway soon followed, leaving the EEA an empty shell.[17] Membership negotiations started in February 1993 with Austria, Finland, and Sweden, and with Norway just 2 months later.

The key principle of any EC enlargement negotiation has been that new members accept the "acquis communautaire," the body of agreed EC law and practice, and that the Community make such changes in the wording of legislation that will incorporate the new members without altering the policy. In practice this principle is breached in two respects:

1) the application of detailed regulations to new members does require fresh interpretation and policy decisions, and
2) the new members bring with them political constraints that must be recognized for the negotiations to succeed.

The first step in the process of enlargement (following an application) is an opinion ("avis") from the Commission that attempts to highlight potential problems for Community policy (and by implication for the applicant). In the cases of Austria, Sweden, Finland, and Norway, the Commission's "avis" was

encouraging.[18] The negotiations for entry began with an examination of the "acquis" to highlight those parts of the legislation where change was needed. In this process, the applicants also noted those aspects of the legislation that might prove difficult for their own political process. These latter points were the basis for more detailed negotiations, starting in the summer of 1993. The content of this list of reservations largely determined the ease with which the negotiations were to be completed.

In principle, each application for membership leads to a negotiation between the Commission (on behalf of the Community) and the individual applicant country. In practice, many of the issues are common to each applicant, and there were significant cross-linkages among the different sets of negotiations. This was particularly true for applicants with agricultural issues in the remote and mountainous regions.

Negotiations were concluded in March 1994 and the Accession Treaties were signed in June. In each of the applicant countries, the decision as to whether to accept the negotiated terms was put to a referendum. Agriculture played a major role in the debate on membership in each applicant.

In general, farm groups were strongly opposed in Norway and less adamantly against membership in Finland and Austria. Only Swedish farmers, who had seen supports decline prior to accession, could see any merit in joining the EU, though even there sentiment was mixed. Austrian voters gave EU accession a clear endorsement in June 1994 by a 67-percent majority. This was followed in the fall of 1994 by positive though not overwhelming votes in Finland (57 percent in favor) and Sweden (52 percent in favor) and a fairly narrow negative decision (52 percent against) by the voters in Norway. The agricultural issue was indeed one of the major reasons why Norwegian voters rejected membership, with heavy majorities against the EU in rural areas, in particular in the north.

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[16] Under both EFTA and EEA rules, protection is allowed for the agricultural component of processed agricultural goods where the costs differ between countries. This tends to reinforce the isolation of national food firms.

[17] The EEA is now comprised of the EU, Norway, Iceland, and Liechtenstein.

[18] As an example of a negative "avis," the Commission reported on the Turkish application in much more guarded tones and recommended against the start of accession talks.

The speed of the negotiations for EU accession by four of the EFTA countries was possible largely because of the existence of a set of free-trade agreements between those countries and the EC. In most areas of commercial policy, including services, the EEA already obliged the EFTA countries to line up with the EC. Thus the main economic advantage of membership for the EFTA countries was to gain a voice, as full members, in setting rules and regulations for the commercial market in which they were already players.

Agriculture in the EFTA Countries

Agriculture in the EFTA countries operates under conditions notably less favorable than in the much of the rest of the EU. In the Nordic countries, short growing periods lead to low crop yields, and livestock has to be housed inside for much of the year. Transport costs are high, both for inputs purchased by farmers and for products sold on the market. The terrain is often difficult, the size of the local market usually small, and the structure of production (except in southern Sweden) is not conducive to scale economies. In the Alpine areas, altitude and slope combine to make mechanized farming difficult, though the influx of tourists provides a buoyant local market. Some of the main features of the agriculture of these countries are shown in tables 7-9.

The different issues which kept agriculture to the forefront of the negotiations in each country are introduced below.

Austria

Austria, the first EFTA country to apply for membership in the EU, has extensive trade ties with the Union, and rather few trade links with other EFTA countries. Politically and culturally it feels itself to be a part of Western Europe, albeit sharing with its eastern neighbors the experience of Soviet occupation after the war. Austria is a relatively small and affluent country, with a population of 7.8 million and an average income of 22,000 ECU's per head (compared to the EU average of 18,000 ECU's).

Assimilation into the broader EU will pose few problems for Austria. Among the main issues in the membership debate were the fragile Alpine environment, the ability of the Austrian government to continue to pay direct subsidies to small farmers, the competitiveness of the Austrian food processing industry, and the widespread concern about uncontrolled growth of traffic across the mountain passes.

Agriculture in Austria is not a major industry, but is deemed vulnerable to competition from abroad and vital to the health of the tourist sector in the Alpine areas. The farm sector employs about 6 percent of the labor force, but generates only 3 percent of GDP. Protection has come both in the form of price supports, maintained by border controls, and through closely regulated domestic marketing, favoring small local firms and cooperatives. Under the Austrian model of economic policy, the government and farm organizations work closely together to ensure employment in rural areas and to support incomes, resulting in a sector not well structured to face direct competition.

Table 7—Population, GDP, and shares of agriculture in EFTA applicants for EU membership

Country	Population	Agricultural labor force	Share in labor force	GDP	GDP per capita	Share of ag. in GDP
	Million	*1,000*	*Percent*	*Bill. ECU*	*1,000 ECU*	*Percent*
Austria	7.8	208	6.1	170.5	21.9	2.9
Finland	5.0	205	7.0	114.0	22.8	3.0
Norway	4.2	112	5.2	104.8	24.9	3.0
Sweden	8.5	106	1.9	193.2	22.7	1.4
Switzerland	6.7	240	4.1	224.5	33.5	3.2
EC-12	325.3	9,019	6.6	5,900.9	18.1	3.8

Source: *C.A.P. Monitor*. Data are for 1991.

Table 8—Land use characteristics of the EFTA applicants for EU membership

Country	Total land area	Agricultural land	Arable land	Pasture land	Number of farms
	Mill. ha.	Mill ha.	Mill. ha.	Mill. ha.	
Austria	8.4	3.5	1.5	2.0[1]	273,000
Finland	33.8	2.6	2.5	0.1	200,000
Norway	32.4	1.0	0.9	0.1	91,000
Sweden	44.9	3.4	2.9	0.5	95,000
Switzerland	4.1	2.0	0.3	1.7[1]	94,000
EC-12	225.8	127.5	67.3	48.0	6,929,000

[1]Includes alpine pasture.
Source: U.S. Department of Agriculture, Economic Research Service, *Western Europe Agriculture and Trade Report*, December 1992. Figures refer to 1990 or closest available year.

Table 9—Farm structure characteristics of the EFTA applicants for EU membership

Country	Agric. area per farm	Cereal area per farm	Dairy cows per farm	Cattle per farm	Pigs per farm
	Ha.	Ha.			
Austria	13.6	2.7	7.1	17.9	25.4
Finland	13.0	6.0	11.0	22.0	128.0
Norway	10.4	11.3[1]	12.0	26.0	82.0
Sweden	29.0	14.0	22.0	36.0[1]	158.0
Switzerland	15.2[1]	4.9	12.5	28.1	69.0
EC-12	16.5	8.2	17.1	33.2	57.6

[1]Includes alpine pasture.
Source: EC Commission. Statistics refer to various years between 1988 and 1990.

Austrian agricultural policy began to change even before the discussion of enlargement. Under a Framework Agreement of 1990, the policy was being oriented toward greater competition in processing and marketing. Set-asides had been introduced for cereals, where surpluses were evident, and farmers were encouraged to switch to oilseeds. The government also instituted a supply restraint program for milk, and paid compensation to farmers who left the sector. Support payments were increased to mountain areas, however, setting up the conflict with EU policy which surfaced in the negotiations.

Austrian agriculture should not be too disadvantaged by membership. Climate and soil are productive in valleys, and yields are high by the EU average. Farms are smaller than the EU average (13.6 hectares, versus 16.5), and livestock per farm is also low. The challenge of EC membership, therefore, includes restructuring the domestic farming and processing industries to compete with larger-scale firms in the EU.

Finland

Finland shared with Austria the experience of living under the shadow of Soviet foreign policy, though it too retained democratic institutions and a market-directed economy. Its trade has been somewhat less completely integrated with the EC, having strong ties to both the former Soviet Union and to other Nordic countries. Finland's dependency on Soviet trade caused severe problems when the USSR broke apart. Nevertheless, Finland is an affluent country with a skilled work force and bountiful natural resources. As such it should also be able to assimilate with little difficulty into the EC market.

Finland has a population of 5 million and a per capita income level of 23,000 ECU's, well above the EU average. The agricultural sector employs about 7 percent of the labor force, and generates 3 percent of GDP. However, only 7.6 percent of the land is used for agriculture, and the population density, at 16 inhabitants per square km, is barely one-tenth that of the EU average. Farms are somewhat smaller than the EU average (13 hectares, versus 16.5 for the EU-12), and livestock herds are also smaller.

Finnish agriculture, in contrast to the manufacturing sector, faces considerable problems arising from the process of membership. Protected for many years by an autarchic policy that all but excluded imports, Finnish farmers had to worry less about foreign competition than about the slowly growing domestic demand and the accumulation of troublesome surpluses. Each year the government would negotiate with farm groups the distribution of the cost of disposing of such surpluses.

The opening of the domestic market to EC imports will most likely be traumatic. Agriculture began a slow reorganization in preparation for the eventual opening of the market, but yields are still low and production costs high. Price levels were frozen and direct payments were given in compensation. A sharp devaluation of the Finnish Markka elevated import prices and somewhat closed the gap between Finnish and EU support levels. Policies were implemented to reduce the agricultural population and consolidate farms. However, Finland still anticipated a long transition in prices toward EU level.

Sweden

Sweden boasts an economy as technically advanced as any in Western Europe, and a society that has prided itself on external neutrality and domestic cohesion. Nevertheless, in Sweden it was widely accepted that closer links with the Union would be helpful in fostering further economic progress. In addition, neutrality has been less of a guiding principle since the fall of the Soviet Union, and even the much-praised domestic social model was felt to need an overhaul. Accession to the EU became a priority by 1991, and

Sweden was the first Scandinavian applicant to seek membership.

The population of Sweden, at 8.5 million, makes it the largest of the new members. Per capita income levels are comparable with Finland, and high by EU standards. Swedish agriculture, which accounts for less than 2 percent of the labor force and about 1.4 percent of the GDP, is comprised of small-scale farming in the northern areas, akin to that found in Norway and Finland, and efficient larger-scale farming on the southern plains. The latter areas rival Denmark for productivity and have led to some export surpluses of grain and livestock products from Sweden. As a result, Sweden can expect to be a supplier to other markets in the region.

The changes in the agricultural sector expected as a result of Swedish accession are likely to be less than for the other Nordic countries. Though Sweden historically protected its agriculture at high levels, it undertook a radical reform in 1991; its New Food Policy brought price levels much more in line with those of the EU. The 35-percent reduction in cereal prices over a 3-year period, compensated by hectarage subsidies, was a preview of the policy adopted a year later by the EU. As a result of the reform, farmers in Sweden have not taken such a negative stance on accession as those in Finland or Norway. On the other hand, Sweden was careful to preserve, at least for a time, the stricter health and phytosanitary standards that were adopted in that country.

Norway

The Norwegian population, at 4.2 million, is less than that of the other applicants. Income levels are high, and the existence of considerable reserves of North Sea oil and gas has given the economy a degree of affluence and independence reflected in its relationship with the Union. Agriculture is a minor source of employment (5.2 percent) and income (3 percent), but plays a larger role in the economy of the northern part of the country. The fishing sector and the farming industry have been concerned about the loss of income that might follow the opening of the Norwegian market to imports from the EU. Farms are generally small and produce at high cost. The main

areas of population are in the south of the country or on the coast, more easily served by imports than by remote domestic farms.

Perhaps more so than its neighbors, Norwegian agriculture appears justified in fearing competition from other parts of Europe. Policy reform has been slow in Norway, with concern about keeping the remote areas populated, but some decrease in support prices has been achieved, together with an increase in direct payments. Dairy quotas have been cut and the government has recompensed farmers for leaving milk production. However, with small, high-cost farms comprising most of the agricultural structure, the problem of competitiveness may be difficult to solve.

Switzerland

Switzerland is the most affluent of the prospective EU members, with a per capita income of 33,500 ECU, nearly twice the EU average. The population, at 6.7 million, is somewhat less than in Austria. Agriculture in Switzerland employs about 4 percent of the population, and contributes just over 3 percent of GDP. As in Austria, agriculture plays a major role in the tourist industry, both as a provider of food and services and as guardian of the Alpine landscape. Concern in rural areas about the impact of EEA membership led to the rejection of that treaty.

The Swiss have also been taking the first steps toward reform of their agricultural policies. Changes introduced in 1992 reduced the gap somewhat between Swiss and EU agricultural policies and prices. Direct income payments compensated farmers for a reduction in the price supports and were linked to environmental objectives in an attempt to encourage the flow of positive benefits from agriculture to the landscape and hence the tourist and recreation industries.

Agricultural Issues in the Negotiations

From this brief look at the agriculture and agricultural policies of the applicant countries, the range of agricultural issues in the negotiations can be seen to center around four main topics of controversy:

- The harmonization of price levels between the EU and the (usually higher) prices in the applicant countries, the most prominent issue;
- The scope for special policies for farmers in geographically disadvantaged areas;
- The competitiveness of the agricultural processing and food sectors; and
- The question of budget contributions, including the decision as to who should pay any agreed upon subsidies to northern and mountain farmers.

These issues are addressed in turn, although they were often interconnected in the negotiations.

Harmonization of Price Levels

The protection levels in the applicant countries in general exceeded those of the EC. The magnitude of this disparity in protection levels is illustrated in table 10, which shows the Producer Subsidy Equivalent (PSE) for the EFTA countries and the EU for the major commodities. Higher support for grains, milk, and beef exists in Finland and Norway, and for grain-fed livestock products (pigs, poultry, and eggs) in all the EFTA countries, relative to the EU.[19] Membership entailed a significant downward price adjustment with the important exception of Sweden, which had already begun to reduce support.

The Community has been enlarged before, on three separate occasions, giving some precedent for handling the issue of support price differences in agriculture. In each of the three previous EU enlargements, there were price gaps to overcome.

The UK, together with Denmark and Ireland, entered the EC in 1973 with lower price levels for agricultural goods. As exporters of agricultural products, Denmark and Ireland both wished for a speedy transition to full EC prices in order to take advantage of access to the EC market. The UK, by contrast,

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[19] Also evident is the generally high level of support for all commodities in Switzerland, an indication of the opposition in rural areas to any closer links with the Union.

Table 10—Levels of farm support in EFTA applicants for EU membership: Producer subsidy equivalent (PSE) levels in 1991

Commodity	Austria	Finland	Sweden	Norway	Switzerland	EC
				Percent		
Wheat	75	84	50	84	84	61
Coarse grains	35	84	57	86	83	55
Sugar, white	77	73	55	0	83	67
Milk	66	76	74	83	85	69
Beef and veal	55	60	51	71	83	54
Pigmeat	33	53	36	51	62	8
Poultry	47	58	35	50	85	18
Eggs	46	40	53	48	82	-3
Sheep	0	80	51	89	79	68
All commodities	52	72	59	77	80	49

Source: OECD PSE tables, 1993.

enjoyed low agricultural prices under a policy particularly attractive to consumers. Though British farmers had the benefit of deficiency payments, the market had been open to imports from the overseas Commonwealth countries, as well as from Ireland and Denmark, without tariffs or levies. Though this policy was to change in 1973, EC membership still implied a sharp rise in support prices together with the adoption of a new support system.

The transition was handled using "accession compensation amounts" (aca's), payments added to or subtracted from levies and subsidies at the border to control the harmonization of price levels. Over time these aca's were phased out until prices were finally harmonized. In addition, "special trade mechanisms" (stm's) in the form of quotas controlled against import surges. These mechanisms were used when Greece joined the EC in 1981 and again for Spain in 1986.[20] In the case of Portugal, an additional twist was added. Portugal was given an additional "pre-transition" period during which the marketing system was to be brought into line with that of the Community.

The defining nature of this "classic" transition method is that border taxes and subsidies be used over an extended period. However, the EFTA countries were acceding to a European Union which had already completed the "Single Market" project, removing

internal trade barriers, and was committed by the Maastricht Treaty to an "Economic and Monetary Union." The Commission, negotiating on behalf of the EU, took the view that joining a Post-Maastricht Union precluded the use of border devices to maintain price differences. To keep border posts for the sole purpose of collecting agricultural aca's would be administratively costly; any transition arrangements should be of a budgetary nature.

This policy was not in line with the wishes of three of the applicants. Austria argued for a 7-year transition period for agricultural prices, and Finland wanted as long as 12 years in which to harmonize price levels. Only Sweden, with prices at or even below EU levels, did not ask for a transition period. In the end, the Commission view prevailed, and no transition period was allowed for prices. But in consequence the applicant countries were allowed to maintain more generous non-price subsidies than perhaps would have been possible if there had been a transition period for price harmonization.

The issue of price harmonization was not made easier by 1992 CAP reform. The cereal price level to which the EFTA countries had to move was in effect lowered by 30 percent as a result of CAP reform. Offsetting this, however, was the devaluation of several of the EFTA currencies, relative to the ECU, in the 1992-1994 period, which raised in domestic currency the EU price support levels.

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[20] In the case of Spain, the concern was to prevent a sudden export surge of agricultural goods from the new member to the existing Community.

Special Programs for Farmers in Disadvantaged Regions

The applicant countries were united by their agricultural sectors' need for additional support to compensate for the locational disadvantages of altitude, slope, short growing season, or remote location. The EU has for many years had a system of compensation for such farmers under the "hill and less-favored area" (LFA) Directive. Payments are made, mainly to livestock enterprises, on a headage basis. Each of the applicants, which had existing policies giving either higher prices or extra payments to their remote and disadvantaged farm regions, calculated that the LFA Directive would not adequately compensate for the loss of these national programs.

Three possible avenues were open:

- Expand the definition of the LFA Directive so that the Nordic and Alpine farms were all fully covered;
- Allow a continuation of the current national policies, at least for a limited period; or
- Devise a new policy at the EU level which would assist the farmers in the remote areas of the new members.

In the end, all three options were extensively discussed. The application of existing LFA payments to the new members was ensured by modifying the definition of eligible farming situations. Moreover, Austria was allowed to choose criteria from among those in use for existing members so as to increase the country's eligibility. About 80 percent of the farming area in Finland has been deemed eligible for LFA grants, along with 50 percent of Swedish farmland and 40 percent of Austrian farms. This program is funded from the budget of the EU (FEOGA), with national co-payments.

National payments under existing programs were also allowed to remain in use, though within some constraints. The "Grundbetrag" payments for small farmers in Austria were authorized for a period of 10 years if adequate payments were not forthcoming from other programs. More significantly, state aids for Nordic farmers can be paid "on a long-term basis" in Finland and Sweden. In addition to these national

programs, degressive compensation can be paid from national funds over a 5-year period so long as the compensation is not linked to current production.

The third option (a new EU policy for Nordic agriculture) was ultimately rejected. The Commission was wary of special, higher price levels that would be applied in specific parts of the Union, particularly as these regions were less productive than others. To reward lower yields with higher prices and encourage farming in the areas most remote from markets seemed in contradiction to the EU's desired specialization in an internal market. Direct payments to countries with higher-than-average incomes for domestic political reasons did not appeal to the Commission. The compromise was to allow the new members to continue regional payments, subject to conditions on the means of payment, as described above.

Non-price payments with respect to the adoption of the existing CAP was an issue of importance to applicant countries. The cereal and oilseed farmers in existing EC member states have benefited from compensation payments, paid per hectare on the basis of regional yields, following the price decreases of 1993-1995. From the negotiations' beginning, all participating parties assumed that these payments would form part of the "acquis," and thus would be available to new members. This avoided the political problem of appearing to treat EFTA farmers less generously than those in existing member states, but also built in the notion of an entitlement not tied to compensation for a historical price drop.[21]

Processing Industry and Competitiveness

The lack of competitiveness of the agro-processing industry and of the food sector as a whole was a concern to all four applicants. The Finnish food sector grew up behind protective walls and was commonly thought to be vulnerable to Danish and Swedish competition. The Austrian agro-processing industry was dominated by small-scale enterprises with guaranteed

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[21] Swedish farmers, for instance, would get the compensation payments for a price drop which had already occurred in 1990 without compensation as a part of the policy change in Sweden.

margins and little competition within the country and feared being swamped by German and Italian processed goods. Norway was concerned that northern processing industries such as dairies and meat-packing plants would be unable to survive without direct government assistance.

The weakness of these sectors was generally recognized; the cure was disputed. The Commission argued that the industries themselves would benefit from lower prices for agricultural raw materials and the structural changes that would come about in the context of a wider market were just what was needed for the survival of these sectors. This view prevailed, and no special provisions were made to continue subsidies for the food sector in the applicant countries. These industries would, however, be eligible for structural funds and would no doubt attract private capital for their investment.

Budget Questions

As is normal in negotiations of this type, the conclusion on the issue of contribution to the budget was left until the last moment. In effect, it acted as a balancing item, with payments to the prospective members (or reduced collection of funds from them) used to compensate for the "losses" in the negotiation process. In effect, the budget discussion allowed several items to be rolled into one: The EU's contribution to the "national" payments for the compensation of farmers for a rapid transition to EU price levels; allowance for the time it would take for new members to be able to use structural and other EU funds; and the EU's take-over of the payments made by the EFTA countries in the name of "cohesion" as part of the EEA agreement, as well as some other payments for "flanking" policies.

An additional budgetary item allowed for an expansion of "agro-environmental" programs in the new members. In effect, the budget deal also allowed a resolution to the underlying issue of who was to pay for the MacSharry compensation payments to which it was agreed the new members' farmers were entitled. Subject to the need in the applicant countries to keep some equity in the budget balance with the EC, the budget agreement solved each of these financial issues without having to argue each item individually.

Terms of Accession for Agriculture

The final terms agreed to by the negotiators can be summarized under eight headings:

1) *Immediate adoption of the policies and prices of the CAP by all members*: The arguments of Austria, Finland, and Norway to the contrary, EU price levels were introduced into the new members with no transition period, meaning that no border taxes or subsidies are required to keep market price levels different by country. The decision was forced by the logic of the "single internal market," which has no provision for maintaining different price levels. This puts the accession of the EFTA countries in sharp contrast to that of previous new members who were allowed transition periods, and sets a strong precedent for future membership negotiations.

2) *Allowance for digressive national aids for a 5-year period to offset the price drops for farmers*: Transition periods for farmers were handled by payment of national subsidies on a digressive basis to farmers. The new members could pay state aids to farmers where price gaps were significant, so long as these aids decreased over the period. The Commission left it up to the new members to submit for approval policies that would meet the relevant criteria of digression and non-interference with trade.

3) *Immediate participation in the budgetary mechanisms, subject to a 4-year schedule of payments to the new members*: The budget issue was sensitive, as the new members were expected to be net contributors and yet could not afford to be seen as such by their voters. In the end, the EU conceded that a budgetary deal was needed to cushion the financial burden of membership. A schedule of payments to new members amounting to 2.6 billion ECU (without Norway) was delivered over a period of 4 years to offset the cost of transitional national subsidies to disadvantaged farmers.[22] The magnitude of the final budget package

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[22] The first year's contribution included a notional allowance because the new members most likely would not receive funds from the various structural programs in that year, as a result of normal delays in preparing submissions, processing grants, and disbursing payments.

Table 11—Budgetary compensation to new members for agricultural programs

Country	1995	1996	1997	1998	Total
			Million ECU		
Austria	583	106	71	35	795
Finland	476	163	65	33	737
Sweden	488	432	76	31	1,027
Total	1,547 [1]	701	212	99	2,559

[1]Includes 861 million ECU's to compensate for loss of eligibility for structural funds.
Source: Chapter 15 (Agriculture) in General Secretariat of the European Council (1994).

for agriculture is shown in table 11, with a sharp decline in EU contributions evident after 1996. The deal was clearly necessary to bring the negotiations to an end, but equally clearly signifies the limited commitment of the EU budget to the support of Nordic farmers.[23]

4) *A promise of "rapid action" by the Commission in case of market disruption in the new members*: Though the Commission did not make clear what action it would take (short of price interventions, which are specifically excluded), this part of the agreement has at least the effect of assuring farmers in the new member countries that their situation will be monitored in Brussels.

5) *The authorization of long-term national aids to Nordic farmers, subject to the conditions that they do not distort competition and are not linked to "future" production*: This element of the outcome is the main response to the call for a special program to deal with agriculture in the remote northern regions of the enlarged Union. The specific regions in which such payments would be authorized include those with low population density (less than 10 people per square km), low agricultural usage (less than 10 percent of the total area in agriculture), and little arable land (less than 20 percent of the agricultural land under crops). The area was designed to cover all land above the 62nd parallel, as well as some areas below it. Payments can be tied to hectares used, head of livestock, or past production levels.

The Nordic Agriculture Policy, which emerged from the negotiations, was the product of compromise. The applicants in effect won the right to continue subsidies to agriculture in the northern areas; in turn, the EU was able to insist that these policies not distort competition unduly in the Union. The restriction that the payments not be based on future production is an attempt to reduce the output-increasing aspects of income support. Countries have yet to define the policies that would qualify under this heading. Whether the compromise language produces policies acceptable to the EU remains to be seen.

6) *Authorization of special national aids by Austria in favor of small farmers for a 10-year period*: The Austrian negotiators secured their goal to continue paying a subsidy (the "Grundbetrag") to small farmers, at least for a 10-year period (if payments from other aspects of the policy are not adequate to maintain incomes). This issue was politically sensitive in Austria, and its resolution was considered necessary to make accession acceptable in rural areas.

7) *Modification of the rules for Least Favored Area payments to include more area of the adhering countries*: From the outset of the negotiations, the criteria used in the existing EU for the definition of "least favored" areas were recognized as inadequate to give new members the same benefits. The compromise involved modifying the criteria for payments to farmers embedded in current legislation. In effect, new members were allowed to pick and choose the criteria from the range employed in present member states. Austria, for example, chose a mixture of the French criteria for altitude and slope of land and the German criteria for location and population density. Forty per-

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[23] The final budget package also included some adjustments arising from the new members' "cohesion" contributions to EEA financing and to the "flanking" policies under the EEA.

cent of Austrian farmers will qualify for LFA payments under these criteria. For Sweden, the proportion is higher (50-percent eligibility), while in Finland 85 percent of the farmland is covered by the LFA criteria.

8) *Allowing new members to rapidly implement "agro-environmental programs in favor of [their] farmers"*: The new members share with each other a commitment to the environment and a need to demonstrate that commitment in a way visible to the public. This is reinforced in the terms of accession by the commitment of budgetary funds for the implementation of agro-environmental programs. The sums indicated in the agreement include 175 million ECU's for Austria, 135 million ECU's for Finland, and 165 million ECU's for Sweden.

Impact of Membership

New members' concern about massive disruption of the rural economy as a result of membership was understandable and realistic, given the protected nature of agricultural markets in these countries. The concern was not shared in Brussels, where the notion of accession by countries that would buy more EU farm products rather than add to surpluses was encouraged.

In fact, the quantitative impact on European agricultural markets of the accession to the EU of the three new members is unlikely to be great. This is due to three factors:

• The countries themselves are relatively small, both in terms of population and agricultural production, and will not add greatly to the volume of production in the Union.
• The three new members have negotiated the freedom to pay substantial hectarage and headage payments to farmers in remote areas, which will presumably act to keep those farmers from leaving the land idle. Production will no doubt fall over time, with depopulation and extensification, but a major migration is not expected in the short run.
• Production in some areas could actually increase as a result of the opening of markets. Swedish sales to Finland, for instance, could increase. Not all sec-

tors in closed markets are necessarily inefficient. Even Finland could find that some parts of the agricultural sector might develop export markets in addition to competing well with imports from the EU.

The ESIM model was used to see whether this expectation of little change in the overall EU balance was supported by empirical estimation.

Model Results

The quantitative results of the ESIM model, using the same scenarios discussed above, for the EFTA countries show this lack of dramatic change in the market balance as a result of EU membership. The production, demand, and net trade of grains (wheat plus coarse grains) for the EFTA countries are shown in table 12 for the years 1995, 2000, and 2005.

Grains

The results indicate a slower rate of growth of grain production in the new members due to membership. The level of grain output is expected to be 3.1 million tons less by the year 2000 than if these countries had not joined. By the year 2005, this gap could rise to 3.6 million tons. The reduction in prices as a result of the CAP constrains the growth in grain production, but the effect is not felt in the short run. Indeed, in 1995, production was actually higher with membership, the result of an increase in support for grain producers in Sweden, where the combination of higher support prices and generous compensation payments under the CAP led to an expansion of grain output. Grain output for the EFTA-3 is the same for scenarios 1, 2, and 3 because the entry of the EFTA-2 and the CEEC-4 in 2000 does not markedly influence these countries. There is, however, some slight decline in grain output (400,000 tons) in scenario 4, when the CAP is further reformed.[24]

The EFTA-2 are assumed in scenario 2 to join the EU at the turn of the century, which is estimated to drop their grain production by 0.7 million tons in that year

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[24] The assumption of further CAP reform influences other commodities more than cereals, where the 1992 reform program is expected to continue.

Table 12—Grain market, EFTA countries

EFTA-3[3]	1989/91	1995	2000	2005	EFTA-2[2]	1989/91	1995	2000	2005
Total grain production	*Million metric tons*					*Million metric tons*			
Base	14.7	12.5	18.9	21.2	Base	2.7	2.6	3.3	3.7
Scenario 1	14.7	14.1	15.8	17.6	Scenario 1	2.7	2.6	3.3	3.7
Scenario 2	14.7	14.1	15.8	17.6	Scenario 2	2.7	2.6	2.6	2.9
Scenario 3	14.7	14.1	15.8	17.6	Scenario 3	2.7	2.6	2.6	2.9
Scenario 4	14.7	14.1	15.4	17.2	Scenario 4	2.7	2.6	2.6	2.8
Domestic demand									
Base	11.3	9.6	10.1	10.2	Base	3.2	2.8	3.1	3.2
Scenario 1	11.3	8.9	11.8	11.4	Scenario 1	3.2	2.8	3.0	3.2
Scenario 2	11.3	8.9	12.5	12.2	Scenario 2	3.2	2.8	3.4	3.4
Scenario 3	11.3	8.9	12.4	12.1	Scenario 3	3.2	2.8	3.4	3.4
Scenario 4	11.3	8.9	12.3	11.9	Scenario 4	3.2	2.8	3.4	3.4
Net trade									
Base	3.4	2.8	8.8	11.1	Base	-0.5	-0.2	0.2	0.5
Scenario 1	3.4	5.2	4.0	6.1	Scenario 1	-0.5	-0.2	0.2	0.5
Scenario 2	3.4	5.2	3.3	5.3	Scenario 2	-0.5	-0.2	-0.8	-0.6
Scenario 3	3.4	5.2	3.4	5.5	Scenario 3	-0.5	-0.2	-0.8	-0.5
Scenario 4	3.4	5.2	3.1	5.3	Scenario 4	-0.5	-0.2	-0.8	-0.6

[1]The EFTA-3 includes Austria, Sweden, and Finland.
[2]The EFTA-2 are Norway and Switzerland.
Source: European Simulation Model

and by 0.8 million tons by the year 2005. These countries are only marginally affected by further CAP reform.

Domestic demand for grain increases in the EFTA-3 with membership, as a result of lower market prices, with the exception of a temporary drop in consumption in 1995 as a result of higher Swedish prices that year. By the year 2000, these three countries consume 1.7 million tons more cereal, a figure which drops to 1.2 million tons of additional cereal use by 2005. The net result of the production and consumption shifts is a net export decrease by the year 2000 of 4.4 million tons from the EFTA-3; the corresponding figure in 2005 is 6.1 million tons, a 5-million ton drop from the projected base case scenario of no membership.

Accession of the EFTA countries appears to relieve to a certain extent the pressure on the cereals market in Western Europe as a whole (EFTA plus EU), though adding to the surplus of the EU. The EFTA-2, if they were to join in the year 2000, would switch from minor exporters of 200,000 tons to importers of about 800,000 tons.

Other Crops and Livestock

The projections of market balance for other crops and for livestock products show that rather little impact can be expected from membership. Sugar production is likely to fall somewhat from the 1993 levels, as negotiated production quotas were based on the previous 5-year average production. The level of sugar quotas on which support prices will be paid is given in table 13. Sugar produced over and above these quotas (often referred to as "C" sugar) can be sold on the world market without subsidy. Sugar consumption will tend to increase as price levels come down. As a result, the EFTA-3 is likely to be roughly self-sufficient in sugar in the years to come.

Oilseed production is modest in the EFTA countries, but appears likely to increase markedly with membership, taking up some of the land released from grain

Table 13—Milk and sugar quotas for new members

| Country | Milk | | | Sugar | |
	Deliveries	Direct sales	Reserve	A quota	B quota
			1,000 tons		
Austria	2,205	367	180	316.5	73.9
Finland[1]	2,342	10	200	133.4	13.3
Sweden	3,300	3	175	336.4	33.6

[1]Finland also received a quota for isoglucose (HFCS) of 11,930 tons and a temporary raw sugar input quota of 40,000 tons.
Source: Chapter 15 (Agriculture) in General Secretariat of the European Council (1994).

production. The EFTA-3 could double their production, from 300,000 to 600,000 tons, with accession. This same increase is projected to be maintained through 2005. The quantities produced are still likely to remain small in relation to the EU market as a whole.

Livestock is made more complex by the extensive headage payments to farmers under both pre-existing national policies in the new members and under CAP regulations. The new members negotiated quotas for milk (table 13) which would allow them to continue with current levels of production. The ESIM projections show the level of milk production constant at the quota level for the next few years, as milk production remains a profitable activity under high support prices. The CAP, as reformed in 1992, allows headage payments for cattle and sheep subject to overall limits.

These limits, shown for the new members in table 14, represent historical levels of the herd. The production of beef is, therefore, unlikely to fall, and is projected to rise after membership partly as a result of lower feed costs. Grain-using livestock, particularly pork and poultry, will be affected both by lower feed costs and by increasing competition from the rest of the EU. Pork output is projected to fall marginally after membership but recover by the end of the decade. Poultry production is unlikely to shift greatly as a result of accession.

The impact of EFTA accession on EU budget costs is likely to be rather modest. Budget costs for the EU as a whole rise when accession increases the amount of surpluses that must be exported, or when extra output

reduces tariff and levy revenue. Neither impact is likely in the context of the EFTA-3 accession. The sharp decline of market prices in the new members and their replacement by a set of more-or-less decoupled policies will avoid any increased surpluses. The cost will, however, increase with the burden on EU funds of the MacSharry compensation payments to farmers in the new member states, as well as the budget deal to pay for transition policies. These payments add up to a small increase in expenditure on agricultural support, offset by the new members' contributions to the financial resources of the EU.

The impact of the accession of the three new members on agricultural markets is therefore likely to be modest. The significance of this accession lies more in the precedents that the accession may have set for the much more significant enlargement of the Union to the east. The instant adoption of CAP rules and prices, together with flexible use of structural programs and the encouragement of nationally financed compensation payments, gives a new model for the process of accession.

Table 14—Beef and sheep reference quantities

Country	Suckler cows	Male cattle	Ewes
Austria	325,000	423,400	205,651
Finland	55,000	250,000	80,000
Sweden	155,000	250,000	180,000

Source: Chapter 15 (Agriculture) in General Secretariat of the European Council (1994).

Accession Impacts: Central and Eastern Europe

While EFTA-3 accession already occurred and its direct agricultural implications are likely to be minor, accession of countries from Central and Eastern Europe (CEEC's) is in the future, but its implications for EU agricultural markets and policies may be very significant. Indeed, agriculture is rightly considered to be one of the "political land mines" on the way toward eastern enlargement of the EU.

Policy Issues

There is no doubt that the EU has the political will to include the CEEC's, and to do so as soon as possible. At the Copenhagen Summit in June 1993, the EU heads of state and government agreed "that the associated countries in Central and Eastern Europe that so desire shall become members of the European Union" as soon as they are able "to assume the obligations of membership by satisfying the economic and political conditions required." This intention was strongly reconfirmed by the December 1994 Essen Summit and gained power from the presence of the heads of government of the associated CEEC's at that Summit and later Summits. Eastern enlargement is one of the most important political projects of the EU for the years to come, and discussions on how to proceed will intensify greatly in the near future.

Currently the timing of CEEC accession and the sequence of individual CEEC's to become new members of the EU are unknown. Many in the EU believe that the Union will have to rearrange its own institutional structure before it can seriously begin to negotiate on Eastern enlargement. The Intergovernmental Conference (IGC), which convened in 1996, was to deal with related issues, such as voting procedures in the Council of Ministers, the size of the Commission, and the composition of the European Parliament in order to adjust EU institutions to the larger Union resulting from EFTA enlargement and future rounds of enlargement. Unfortunately, the IGC concluded in June 1997 without solving any of these issues, leaving them to yet another IGC.

At the conclusion of the IGC, the European Commission announced that accession negotiations with some of the CEEC's should be initiated in 1998. Of the CEEC's included in this report (the Czech Republic, Hungary, Poland, Slovakia), only Slovakia was not invited to start discussions next year. This announcement came well after the conclusion of this report; further analysis, excluding Slovakia, has not been undertaken.[25] Furthermore, Slovakia is a relatively small country whose exclusion from the analysis would not materially affect the results. But Slovakia, the remaining Balkan countries (Romania and Bulgaria), and the two Baltic states (Latvia and Lithuania) were assured that they too could start negotiations after further reforms. Within a few years the EU is likely, therefore, to be engaged in accession negotiations with all the CEEC's with whom it now has association agreements. Actual membership of any CEEC is unlikely to be achieved much before the year 2000, but it is probable that around the turn of the century or shortly thereafter the first round of Eastern enlargement may take place.

At the time of this analysis it was not clear which group of CEEC's would be included in the first enlargement wave. The four Visegrad countries were selected for this analysis for a variety of reasons. The Czech Republic and Hungary may be at the top of the list as far as economic criteria are concerned. However, for political reasons having to do with geostrategic considerations, Poland is unlikely to be left out of the first wave of CEEC accession. When the scenarios were constructed, political considerations were expected to lead to Slovakia's inclusion in the first group. Hence, the whole of the Visegrad-4 group were assumed to be in the same boat in terms of Eastern enlargement, so the current study modeled the addition of all four Visegrad countries in the EU with the year 2000 a possible date for entry in the simulation runs dealing with CEEC's accession (scenarios 3 and 4).

Agriculture: The Political "Land Mine"

Agriculture is a "political land mine" on the way to Eastern enlargement of the EU for a number of rea-

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[25] The other countries invited to negotiate accession in 1998, Cyprus, Slovenia, and Estonia, are also excluded from this analysis.

Table 15—Share of agriculture in total GDP and employment in the CEEC's and in the EU, 1993

Country	GDP	Employment
	Percent	
Bulgaria	12.1	21.2
Czech Republic	3.3	5.6
Hungary	6.4	10.1
Poland	6.3	25.5
Romania	20.2	25.5
Slovak Republic	5.8	7.4
Slovenia	4.9	10.2
EU-12	2.5	5.7
Portugal	3.2	11.6
Greece	14.2	21.3
Ireland	8.9	12.2

Source: European Commission (1995a and c).

Table 16—Size of agriculture in the 10 CEEC's relative to the EU-15, 1993

Indicator	CEEC-10 as percent of EU-12
	Percent
Arable land	54.9
Agric. employment	116.5
Cereals production	43.0
Pork production	25.1
Milk production	21.7
Beef production	17.8
Overall GDP	3.2

Source: European Commission (1995a and c).

sons. Eastern enlargement could create difficulties for the viability of the CAP because agriculture in the CEEC's is simply much more important, in terms of its contribution to both employment and GDP, than in the EU on average, even in the poorer member states of the current Union, except Greece (table 15).

With the CEEC's accession, the EU would become much more agricultural than it currently is. If all 10 CEEC's currently in association agreements with the EU had acceded to the Union in 1993, the GDP of the EU-15 would have grown by only 3.2 percent, but the size of EU agriculture would have increased by approximately one-third (table 16). The Visegrad-4 countries account for a large share of total CEEC agricultural production, and agricultural output for these four candidates is large relative to that of the EU-12 (fig. 1).

The period 1989-91 is not a good starting point for assessing the importance of CEEC accession to agriculture. Major changes have taken place in the CEEC's since that period as a result of the transformation processes in these countries. In the base period for ESIM data (the average of 1989 to 1991), the Visegrad-4 countries jointly produced as much as one-third of EU-12 total grain production, approximately one-quarter of EU-12 milk and pork output, more than one-fourth of EU-12 production of sugar and oilseeds,

and approximately one-sixth of beef and poultry output of the EU-12.

As a result, the agricultural potential of the CEEC-4 may seem smaller, and therefore less threatening, for the CAP than may have been the case in the late 1980's. On the other hand, food demand and overall use of agricultural products in the CEEC-4 fell significantly since transformation began, and net trade in agriculture changed less than the decline in output might suggest. With these fundamental changes resulting from the transition process in the CEEC-4, the future of their agricultural markets, and therefore the agricultural implications of their accession to the EU, are not immediately obvious.

Figure 1

Share of CEEC-4 countries in EU-12 output of selected products, 1989-91

Percent of EU-12 production
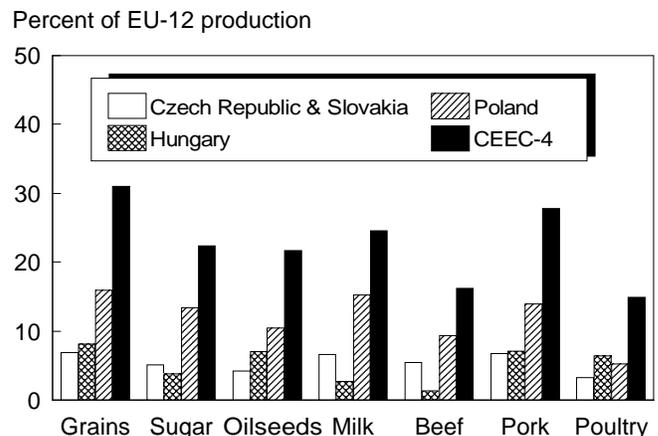
Source: European Simulation Model.

Modeling Issues

The fundamental changes that occurred in the CEEC-4 in recent years pose a significant problem for the scenario analysis to be pursued with ESIM. To put it in abstract terms, in an analytical framework like ESIM and with the policy scenarios considered here, a major part of the action takes place in the form of movements on given supply and demand curves resulting from price changes implied by policy shifts such as accession to the EU. The results of such an analysis may be relatively robust where the conditions determining supply and demand, except for price changes, are reasonably stable.

In the CEEC-4, on the other hand, both supply and demand curves for agricultural products have shifted significantly in the recent past and may continue to shift for some time due to economic and political restructuring. Against that background, using the general base period for ESIM, 1989-91, as the starting point for scenario analysis seemed inappropriate. Instead, data for the most recent year for which statistics were available (at the time of the analysis), 1993, were used to re-calibrate models for the CEEC-4 countries, so for all years after 1993 the CEEC-4 models are effectively run off a 1993 base.

However, assumptions made about the future location of supply and demand curves relative to that starting point preclude a fair amount of speculation into these assumptions. One way of injecting speculation is to look at the nature of changes between 1989, when transition began, and 1993 to judge whether supply and demand conditions may, at least partially, have returned to where they were before the transformation process, or whether the changes which have taken place in recent years should be extrapolated into the future.

On the demand side, several factors contributed to the decline in food consumption in the CEEC's since transition began, but the most important elements in the equation can probably be identified with reasonable certainty. One decisive factor was the elimination of the large subsidies that governments in centrally planned economies introduced into the agricultural and retail food systems in order to keep food prices low in spite of high production costs resulting from inefficient production structures in both agriculture and the food industry. This change is likely to be permanent.

Another factor behind the decline in consumption of traditional foods during the transition process probably was the appearance of consumer goods not earlier available on the market. This factor will also be permanent. A transitory factor, on the other hand, will be the decline in real consumer incomes that has taken place during the transformation process, and the significant increase in unemployment and the resulting uncertainties. The income factor is easy to take into account in the scenario analysis through appropriate assumptions on future growth of consumer incomes.

Most of the other factors behind the decline in food consumption are likely to be non-transitory, so the model assumed that consumption levels reached in 1993 can be used as a starting point for the scenario analysis. Future demand is derived from these levels based on expected changes in prices, real incomes, and population, but no additional shifters are assumed for human demand in the CEEC's.

On the supply side, the factors that resulted in the notable output decline were more complex than on the demand side. Real producer prices in agriculture have fallen significantly. In part, this price decline reflected decreasing demand, both domestically and for exports to other countries in the orbit of the FSU. Elimination of consumer subsidies was another factor behind the price declines. Difficulties in the food industry, which spilled over into the market for raw agricultural products, added to the decline of real farm product prices. Whatever the reasons, the strong real price decline during transition is not in itself a problem for an analysis using a model like ESIM, because the decline did not result in a shift of supply curves (except for cross-commodity price effects, which are fully taken into account in ESIM), but rather a movement on existing supply schedules.

Other factors added to the decline in the CEEC's agricultural production, most notably the many and far-reaching difficulties involved in the fundamental

restructuring of agriculture which went along with privatization and de-collectivization. Traumatic as these changes were, many of the implications for agricultural output are likely to be transitory. Once the difficult and painful process of privatization and restructuring is complete, CEEC agriculture is likely to emerge with better productivity than before transition began. What this means for the future location of supply curves in CEEC agriculture is less clear. Reduced factor input, particularly labor, may well compensate for much, if not all, of the expected productivity gains.

It is probably safe to assume that supply curves in CEEC agriculture will tend to shift to the right from where they were in 1993. Agriculture is not the only sector where output has fallen dramatically during the transition process in the CEEC's. In fact, agriculture has proven more robust in the transformation process than other sectors. Relative to industrial output, agricultural production has actually increased in most CEEC's. This relative health of CEEC agriculture during the transition process may justify some cautious optimism regarding the ability of the farming industry in the Visegrad-4 countries to recover from some of the output decline suffered during the first few years of transition.

In the ESIM components for the Visegrad-4 countries, shifters have therefore been used to move supply curves gradually to the right from their 1993 locations. Though these shifters are essentially arbitrary and reflect the authors' views on what might happen in CEEC-4 agriculture in the years to come, they are basically set so that most of the decline in output between the base period (1989-91) and 1993 is recovered by the year 2000. For feed demand of the individual livestock categories, the assumption was made that feeding efficiency will increase, from 1994 onward, by an annual rate of 0.5 percent.

An important issue in modeling market and trade policies for the Visegrad-4 countries was to define their starting point appropriately. Base period 1993 price levels for the commodities included in ESIM needed to be determined in a way consistent with price definitions used for the EU, where CAP price policies operate at the level of wholesale prices. For example,

intervention prices are prices to wholesalers, rather than farm gate prices. Hence, in order to measure price gaps between the Visegrad-4 countries and the EU, the appropriate wholesale level prices for the Visegrad-4 countries were needed.

Unfortunately, agricultural price information for the Visegrad-4 countries is generally still somewhat of a problem, and wholesale prices are not usually available. Therefore, farm gate prices from national statistics were used as a starting point and assumed marketing margins between farm gate and wholesale level were added. The margins assumed were generally those used by OECD in their PSE calculations for Hungary (OECD, 1994b) and Poland (OECD, 1995).

The resulting price gaps in 1993 between the Visegrad-4 countries and the EU (calculated at 1993 actual exchange rates) are shown for major products in figure 3, where 1993 EU prices are set equal to 100. Agricultural prices have differed significantly among the Visegrad-4 countries but generally have been considerably below prices in the EU. In many cases, a Visegrad-4 country's prices in 1993 were close to world market prices. As a result of the MacSharry reforms and due to future assumed inflation in the EU, CAP prices in real terms will fall by the year 2000, closing the price gap between the Visegrad-4 countries and the EU. Consequently, the
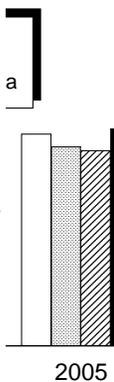
Figure 2
Gross agricultural output in selected CEEC's during transition
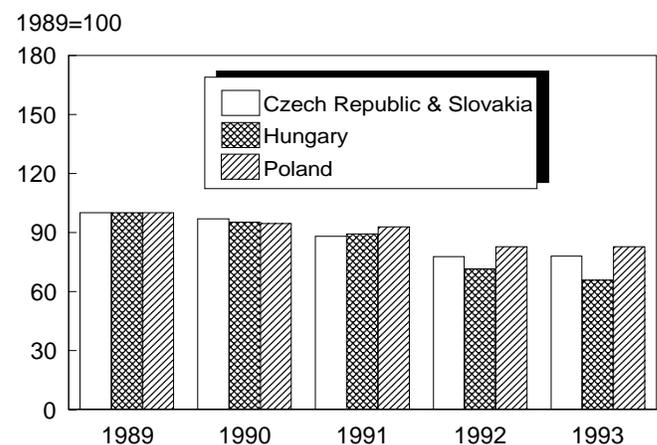
Source: Jackson and Swinnen (1994).

price gap would be smaller in 2000 than it was in 1993.

The future price gap between the EU and the Visegrad-4 countries will also depend on real exchange rate developments. If real exchange rates in the Visegrad-4 countries were to depreciate vis-à-vis the ECU, then the price gap would widen, and vice versa. Whether the Visegrad-4 currencies are now overvalued or undervalued is not clear, but both hypotheses are well argued. In the model runs (and in the prices for 2000 in figure 3), real exchange rates are assumed constant.

Visegrad-4 agricultural policies have become increasingly similar to the CAP, although in practice they are not implemented in the same way as those under the CAP. For most core products there is a more or less rigid price guarantee often protected by import measures and export subsidies.

In modeling the Visegrad-4 country policies, for a number of products the same price policy instruments as are used under the CAP are assumed to apply. For products such as cereals, sugar, dairy products (butter and SMP), and beef, Visegrad-4 countries are modeled to implement price band policies equivalent to those resulting from intervention and threshold prices in the CAP. The locations of these price bands for the Visegrad-4 countries are determined to fit actual prices and net trade positions observed in 1993. From that starting position, price bands are then assumed to move in accordance with the assumptions made in the respective scenarios for individual runs (i.e., kept constant in real terms, or approaching CAP levels under accession scenarios).

Scenario Results

In the base scenario, as well as in scenarios 1 and 2, the CEEC-4 are assumed to remain outside the EU. Moreover, their national policies are assumed to be pursued without regard to a future possible accession to the EU. For most products, the CEEC-4 are assumed to shape their domestic market and trade policies such that their domestic market prices are kept constant, in real terms, at their 1993 levels. This is particularly true for cereals, milk, and beef, where

Figure 3

Prices of major agricultural products in the CEEC-4 countries and in the EU, 1993
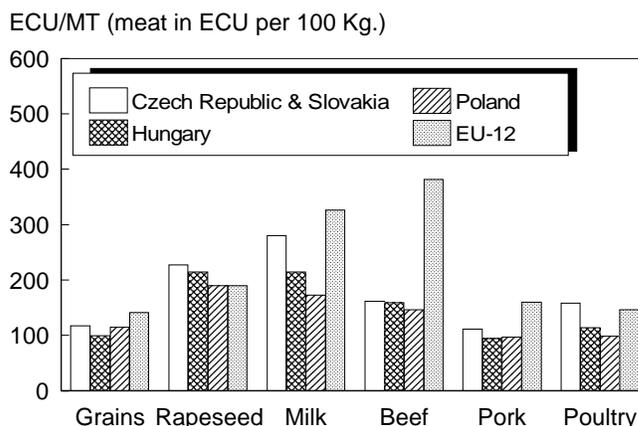
Source: National Statistics, Organization of Economic Cooperation and Development, 1994b and 1995, International Monetary Fund.

the CEEC-4 have generally established market regimes that provide for some form of more or less stringent price guarantee to domestic producers. For oilseeds and cereal substitutes, the CEEC-4 are assumed to maintain the tariff policies that were in place in 1993.

For pork, poultry, and eggs, the assumption for the base scenario is that domestic and trade policies aim at a given net trade volume that existed in 1993. Domestic market prices are determined endogenously such that this net trade volume is maintained. No production quotas are assumed, and set-aside as well as compensation payments are assumed to be non-existent, as was the case in 1993.

In scenarios 3 and 4, the Visegrad-4 are assumed to join the EU in the year 2000 and to adopt the CAP as defined under those scenarios at that time. Moreover, under these scenarios, the CEEC-4 are assumed to begin aligning their policies with the CAP in the year 1996, after having pursued their domestic policies until 1995 as defined in the base scenario. In other words, under scenarios 3 and 4, the CEEC-4 are treated as if they know what price levels and other policies the EU is going to have in the year 2000 (namely, the policies defined for the EU in the respective scenario for the CAP).

The CEEC-4 are assumed to embark, beginning in 1996, on a smooth price-policy trajectory such that the gap between prices and policies that still existed in 1995 is reduced by one-fifth in each subsequent year. Full policy alignment with the CAP is thus achieved in the year 2000. In scenarios 3 and 4, accession to the EU and full implementation of the CAP in 2000 is also assumed to mean that set-aside and compensation payments as introduced into the CAP under the MacSharry reforms are extended to the CEEC-4.

Milk and sugar quotas are assumed not implemented in the CEEC-4 even after their accession to the EU in order to get a better feel for supply pressure in the CEEC-4. For pork, poultry, and eggs, the assumption, in line with the base scenario and scenarios 1 and 2, is that there is one aggregate net trade target for the enlarged EU. This aggregate net trade is the sum of the net trade targets which all members of the EU had prior to CEEC accession.

Scenarios 1 and 2 will not be presented here, as they pursue the same policies with the same results as under the base scenario. Instead, scenario 3a is presented where no set aside is required and hence no compensation payments are made in the CEEC-4. This scenario is introduced as a possible solution to the budget problems pointed out above.

Results for the CEEC-4 are significantly affected by their accession to the EU, though not always in the way expected. Grain production is a particularly interesting case (figure 4 and table 17). Under the base scenario, total grain production in 1995 is some 15 percent less than in the base period (1989-91 average) because of the decline in production during the transition period.

By 2000, total Visegrad-4 grain production in the base scenario recovers to approximately the volume during the base period, around 55 million tons, reflecting the assumptions made regarding supply shifters in the CEEC-4. By the year 2005, yield growth adds another 5.6 million tons to CEEC-4 grain production. This pattern of output changes under the base scenario is apparent for all products. However, accession to the EU and implementation of the CAP, as assumed under scenario 3, results in less CEEC-4 grain production in

2000 and 2005 than under the base scenario. This may appear surprising, given that accession to the EU triggers a price rise in the CEEC-4 (for wheat, figure 5 and table 18). The reason for this somewhat unexpected result is the assumption that full implementation of the CAP in the CEEC-4 includes set-aside and compensation payments; higher prices on EU accession stimulate production less than it is reduced by implementation of set-asides. The effect of set-aside and compensation payments on CEEC grain production is demonstrated by scenario 3a, where all factors are identical to those in scenario 3 except that set aside and compensation payments are assumed not applied to the CEEC-4.

As can be seen in figure 4, under scenario 3a, total CEEC-4 grain production responds positively to the price rise resulting from accession to the EU in the year 2000, and is significantly higher than under scenario 3 where set-aside and compensation payments are assumed to have been applied to the CEEC-4. One of the most interesting questions is how set-aside and compensation payments extended to the CEEC-4 affect the EU budget, which will be discussed again below.

Production of oilseeds in the CEEC-4 responds slightly positively to EU accession (table 17), but this is not due to price changes. Indeed, oilseed prices in the CEEC-4 drop somewhat on EU accession (see rape-

Figure 4
CEEC-4 total grain production under alternative scenarios

Million metric tons

Source: European Simulation Model.

Agriculture and European Union Enlargement
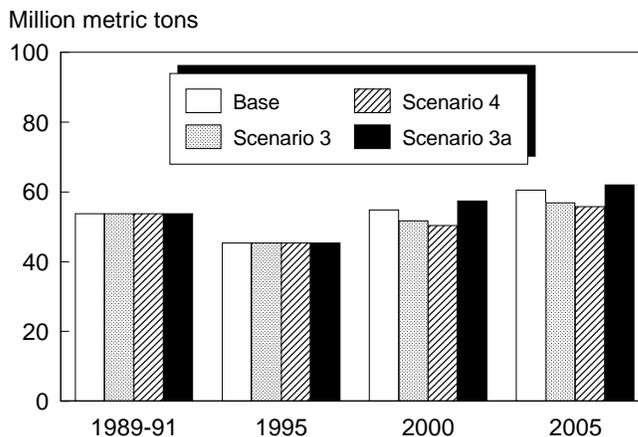
seed prices in table 18) as EU zero tariffs on oilseeds are then applied to the CEEC-4 as well. The slightly positive supply response for oilseeds on EU accession is mainly due to compensation payments assumed to be extended to CEEC-4 oilseed production under scenario 3.

CEEC-4 production of sugar and milk, assumed not constrained by quotas under scenario 3, increases strongly upon accession to the EU because of the significant price rise resulting from inclusion in the CAP (tables 17 and 18). With lower CAP support prices assumed under scenario 4, CEEC-4 production of both sugar and milk is somewhat less than under an unreformed CAP as implied in scenario 3. However, even under scenario 4, CEEC-4 prices for these products are still higher than in the absence of EU accession (base scenario), so CEEC-4 production in scenario 4 is higher than in the absence of EU accession.

The Quota Dilemma: Sugar and Dairy Impacts for the CAP

Enlargement to the east has important implications for future EU policies in the sectors of sugar and milk. The EU has two options: (1) Reform the CAP for sugar and milk with quotas abolished and support prices reduced, or (2) extend the quota regimes for sugar and milk to the CEEC-4. Quota extension to the CEEC-4 is required because, with these countries' potential, production would otherwise rapidly expand in response to high CAP support prices. Nonimposition of quotas would also be politically difficult to accept by farmers in the "old" member states of the EU whose production is constrained by quotas in the EU-15 while sugar and milk output in the CEEC-4 remains unconstrained.

Table 17—Production and use of major agricultural products under alternative scenarios

Product	Production				Total use			
	1989/91	1995	2000	2005	1989/91	1995	2000	2005
	Million tons				*Million tons*			
Total grain								
Base	53.75	45.38	54.85	60.45	51.90	41.17	43.07	45.43
Scenario 3	53.75	45.40	51.71	56.89	51.90	41.85	45.93	49.22
Scenario 4	53.75	45.40	50.38	55.70	51.90	41.85	47.35	50.81
Wheat								
Base	21.56	18.19	22.76	25.05	20.11	16.55	17.81	18.84
Scenario 3	21.56	18.22	21.13	23.36	20.11	16.65	19.14	20.17
Scenario 4	21.56	18.22	20.42	22.39	20.11	16.65	20.07	21.47
Coarse grain								
Base	32.19	27.18	32.09	35.40	31.80	24.63	25.26	26.58
Scenario 3	32.19	27.19	30.59	33.53	31.80	25.19	26.79	29.05
Scenario 4	32.19	27.19	29.95	33.31	31.80	25.19	27.28	29.34
Barley								
Base	9.35	8.05	9.15	10.03	9.36	8.05	8.86	9.42
Scenario 3	9.35	8.06	8.97	9.97	9.36	8.14	8.31	8.88
Scenario 4	9.35	8.06	8.56	9.62	9.36	8.14	8.87	9.48
Sugar								
Base	3.33	2.99	3.21	3.51	3.02	3.07	3.38	3.64
Scenario 3	3.33	2.99	4.71	5.04	3.02	3.07	2.98	3.24
Scenario 4	3.33	2.99	4.19	4.49	3.02	3.07	3.14	3.42
Oilseeds								
Base	2.63	2.33	2.79	3.03	2.63	2.33	2.79	3.03
Scenario 3	2.63	2.31	2.89	2.84	2.63	2.31	2.89	2.84
Scenario 4	2.63	2.31	3.05	2.85	2.63	2.31	3.05	2.85

If quotas were maintained with eastern enlargement, then the difficult issue remains: which base to use for allocating quotas to CEEC-4 producers. If results generated by ESIM tell a realistic story, then a quota allocation to the CEEC-4 based on their sugar and milk output in the mid-1990's would constrain them far below their actual production potential under support prices which EU farmers have enjoyed for a long time.

On the other hand, quota allocation on the basis of CEEC output immediately before their accession would amount to an invitation to the CEEC's to make the fullest possible use of their production potential during the pre-accession period. In this case, the resulting surplus production in the CEEC-4 prior to accession would require them to bear heavy budgetary costs, essentially in order to create property rights to

Wheat prices in the CEEC-4 under alternative scenarios, weighted average
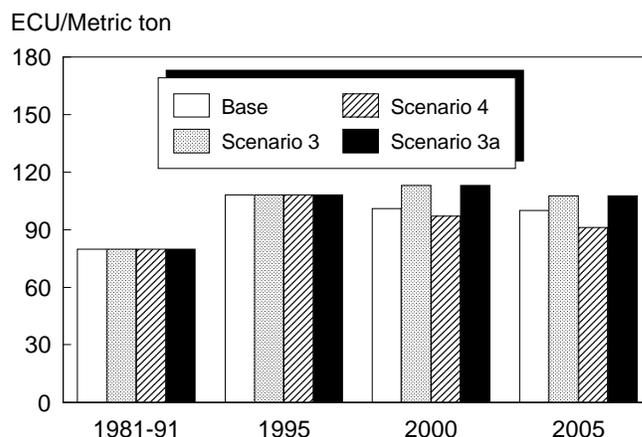
Source: European Simulation Model.

Table 17—Production and use of major agricultural products under alternative scenarios (cont.)

Product	Production				Total use			
	1989/91	1995	2000	2005	1989/91	1995	2000	2005
	Million tons				*Million tons*			
Rapeseed								
Base	1.77	1.47	1.89	2.03	1.18	1.17	1.17	1.17
Scenario 3	1.77	1.45	1.90	2.06	1.18	1.17	1.16	1.16
Scenario 4	1.77	1.45	2.03	2.16	1.18	1.17	1.16	1.16
Milk								
Base	25.33	21.26	23.69	26.26	25.33	21.26	23.69	26.26
Scenario 3	25.33	21.26	29.92	32.56	25.33	21.26	29.92	32.56
Scenario 4	25.33	21.26	28.05	30.48	25.33	21.26	28.05	30.48
Butter								
Base	0.47	0.35	0.41	0.46	0.47	0.34	0.37	0.39
Scenario 3	0.47	0.35	0.61	0.66	0.47	0.34	0.27	0.29
Scenario 4	0.47	0.35	0.51	0.55	0.47	0.34	0.28	0.30
Beef								
Base	1.32	1.15	1.20	1.32	1.25	1.20	1.29	1.40
Scenario 3	1.32	1.14	1.60	1.75	1.25	1.20	0.93	1.02
Scenario 4	1.32	1.14	1.51	1.65	1.25	1.20	1.00	1.09
Pork								
Base	3.85	3.23	3.29	3.61	3.61	3.23	3.46	3.75
Scenario 3	3.85	3.33	4.32	4.80	3.61	3.20	3.21	3.50
Scenario 4	3.85	3.33	4.32	4.79	3.61	3.20	3.27	3.56
Poultry								
Base	0.97	0.79	0.71	0.72	0.77	0.83	0.94	1.05
Scenario 3	0.97	0.88	0.89	0.93	0.77	0.81	0.89	0.99
Scenario 4	0.97	0.88	0.92	0.96	0.77	0.81	0.89	1.00

Source: European Simulation Model

expected quota benefits under the CAP after joining the EU.

Net Effects on Grains and Livestock

CEEC-4 production of beef, pork, and poultry expands strongly with EU accession, reflecting higher EU prices (tables 17 and 18). With reduced CAP support prices (scenario 4), beef production in the CEEC-4 after accession is still significantly higher than in the base scenario. Pork production in the CEEC-4 does not change when CAP prices are reduced (compare scenarios 3 and 4) because pork prices, which are not subject to domestic price support in the EU, fall parallel with prices of cereals and other feeds, leaving the profitability of pork production unchanged. For poultry, the feed-price reduction (under scenario 4) is

Figure 6
CEEC-4 net grain exports under alternative scenarios
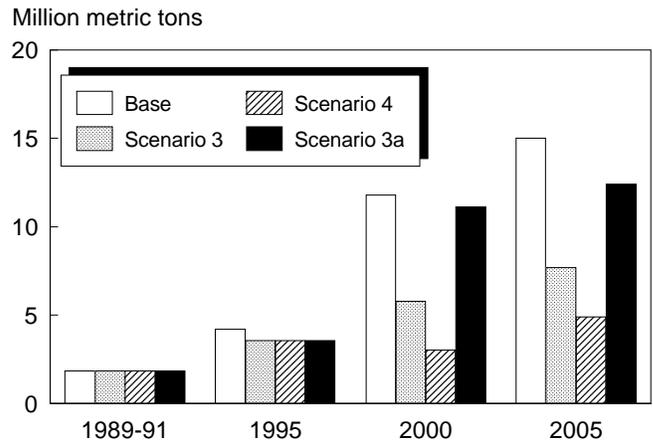
Source: European Simulation Model.

Table 18—CEEC-4 aggregate net exports and market prices of major agricultural products under alternative scenarios

Product	Net exports				Market price			
	1989/91	1995	2000	2005	1989/91	1995	2000	2005
	Million tons				*ECU/t*			
Total grain								
Base	1.85	4.20	11.78	15.02	na	na	na	na
Scenario 3	1.85	3.55	5.79	7.67	na	na	na	na
Scenario 4	1.85	3.55	3.02	4.89	na	na	na	na
Wheat								
Base	1.45	1.65	4.95	6.20	80	108	101	100
Scenario 3	1.45	1.56	1.99	3.19	80	108	113	108
Scenario 4	1.45	1.56	0.35	0.92	80	108	97	91
Coarse Grain								
Base	0.40	2.56	6.84	8.82	na	na	na	na
Scenario 3	0.40	1.99	3.79	4.48	na	na	na	na
Scenario 4	0.40	1.99	2.67	3.97	na	na	na	na
Barley								
Base	-0.01	0.00	0.29	0.61	78	101	93	92
Scenario 3	-0.01	-0.08	0.66	1.09	78	101	113	108
Scenario 4	-0.01	-0.08	-0.31	0.14	78	101	96	91
Sugar								
Base	0.32	-0.08	-0.17	-0.13	392	428	403	397
Scenario 3	0.32	-0.08	1.73	1.80	392	428	609	579
Scenario 4	0.32	-0.08	10.5	1.07	392	428	516	491
Rapeseed								
Base	0.59	0.30	0.72	0.87	185	228	218	210
Scenario 3	0.59	0.28	0.73	0.90	185	223	215	207
Scenario 4	0.59	0.28	0.87	0.99	185	223	210	204

Cont.

sufficient to stimulate output in the CEEC-4, despite lower poultry prices.

Under the base scenario, the CEEC-4 countries are projected to have an exportable grain surplus of nearly 12 million tons in the year 2000, an increase of around 10 million tons of grain surplus over the base period (1989-91). Only 1 million tons are projected to originate from higher output while 9 million tons of the increase is due to lower domestic demand, mainly for feed use. By 2005, net exports of cereals in the CEEC-4 is forecast to rise by another 3 million tons (table 18 and figure 6).

Accession to the EU (under scenario 3) adds around 3 million tons to domestic grain use in the CEEC-4 in 2000 due to higher livestock production in response to better CAP prices. At the same time, grain production shrinks by around 3 million tons under scenario 3, reflecting set-aside under the CAP. Accession to the EU under these assumptions reduces net export avail-

ability of grain in the CEEC's in 2000 by 6 million tons.

Growth of CEEC cereal net exports between 2000 and 2005 is only less than 2 million tons under this scenario. Rather than adding to CEEC surplus production of cereals, accession to the EU under the policy assumptions made here makes net export availability of cereals decrease Set-aside is an important factor in this equation. Even if set aside is not extended to the CEEC-4, higher grain utilization due to more livestock production would still mean lower net exports of grains from the CEEC-4 when they are included in the CAP compared to the base scenario. In addition, the composition of exports is different, i.e., less wheat exports and somewhat higher exports of coarse grains (scenario 3a in figure 6).

Net exports of other major products under the different scenarios are more in line with usual expectations (table 18 and figure 7). For rapeseed, domestic use

Table 18—CEEC-4 aggregate net exports and market prices of major agricultural products under alternative scenarios (cont.)

	Net exports				Market price			
Product	1989/91	1995	2000	2005	1989/91	1995	2000	2005
	Million tons				*ECU/t*			
Milk								
Base	0.00	0.00	0.00	0.00	169	189	189	189
Scenario 3	0.00	0.00	0.00	0.00	169	189	311	295
Scenario 4	0.00	0.00	0.00	0.00	169	189	263	250
Butter								
Base	0.00	0.02	0.04	0.07	1768	1709	1634	1627
Scenario 3	0.00	0.02	0.34	0.37	1768	1708	3362	3197
Scenario 4	0.00	0.02	0.23	0.25	1768	1708	2851	2711
Beef								
Base	0.07	-0.05	-0.09	-0.08	1436	1458	1507	1480
Scenario 3	0.07	-0.05	0.67	0.73	1436	1450	2999	2852
Scenario 4	0.07	-0.05	0.51	0.55	1436	1450	2543	2418
Pork								
Base	0.24	-0.00	-0.17	-0.14	1087	986	1013	983
Scenario 3	0.24	0.13	1.11	1.30	1087	999	1333	1260
Scenario 4	0.24	0.13	1.05	1.23	1087	999	1247	1178
Poultry								
Base	0.20	-0.04	-0.23	-.032	1253	1069	969	884
Scenario 3	0.20	0.07	0.00	-0.07	1253	1126	1277	1141
Scenario 4	0.20	0.07	0.03	-0.04	1253	1126	1210	1080

na=not applicable.
Source: European Simulation Model

CEEC-4 net exports of major products in 2000 under alternative scenarios

Million metric tons
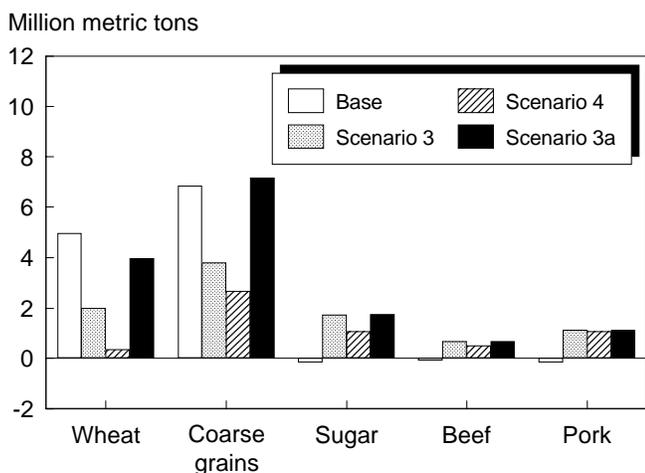
Source: European Simulation Model.

(for crushing) is almost unaffected by EU accession, and net exports reflect the output effect described above. For sugar, butter, beef, pork, and poultry, the positive output effect of high prices in the CAP is amplified by the negative consumption response to higher prices, and net export availability is greatly increased as a result.

A significant part of increased pork and poultry net exports from the CEEC-4 will go to the rest of the EU, rather than to third countries. As a result, pork and poultry producers in the EU-12 will face growing competition from their colleagues in the "new" member countries in the east. Given the lack of domestic EU price support for pork and poultry, increased competition from the acceding CEEC countries will depress prices in the western EU (as it does in ESIM).

Whether the CEEC-4 become large net exporters of pork does not depend on just the price but also on the quality of the pork, which requires sufficient investment to upgrade the breeding, growing, and processing of hogs to meet EU sanitary regulations and quality standards. The analytical framework can only account for price differentials and assumes quality to be the same; whether over the next 10 years the CEEC's can match the quality of EU pork and export to EU countries remains to be seen. Environmental problems in the EU-12 in pork production may in fact favor the transfer of production to the CEEC-4.

Dutch and Danish hog producers are already investigating the possibility of transferring production to the CEEC-4. With Dutch and Danish capital and know-how, CEEC-4 production and quality could improve significantly over the next few years.

The pork and poultry sectors may be where the effects of eastern enlargement are most directly felt by farmers in the EU-12. However, with lower CAP prices (scenario 4), net exports of the CEEC-4 are somewhat reduced for all except poultry, where the output increase mentioned above results in slightly higher net exports. The point is that the CEEC-4 will put pressure on livestock markets within the EU and is less likely to pressure the world market.

Budget Effects for the CAP and the CEEC-4

The most dramatic effects of CEEC-4 accession occur in the budget sector (figure 8). If the CEEC-4 countries do not join the EU (base scenario), their net budget expenditure on agricultural market policies (subsidies less tariff revenues) remains negligible for the projection period. However, if the CEEC-4 join the EU and implement CAP reform as it stands (scenario 3), then budget expenditure at the time of accession shoots up to around 7 billion ECU (in 1993 ECU's). With a more restrictive level of support prices under the CAP (scenario 4), 2 billion ECU's in expenditure can be saved in the CEEC-4, but even then expenditure is some 5 billion ECU's higher than with a continuation of 1993 CEEC policies. Budget expenditures under the accession scenarios decline somewhat from 2000-2005 because domestic EU prices are assumed to decline in real terms, and thereby come a little closer to world market prices.

These figures contain a number of important messages. CEEC-4 accession will place a heavy burden on the EU budget if the CAP is not changed. Budget problems will be exacerbated if quotas are not imposed on CEEC-4 sugar and milk production (as assumed under scenario 3). Compared with projected CAP expenditures for an EU not including the CEEC's, the magnitude of potential CAP expenditures in the CEEC-4 is put in perspective.

**Budget costs for CEEC's under
alternative scenarios**

Billions of ECU's
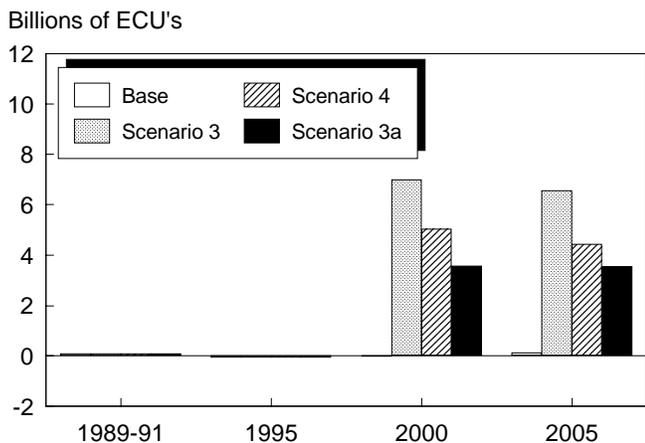
Source: European Simulation Model.

Under scenario 3, expenditures projected for 2000 by ESIM is 13.9 billion ECU's for agriculture in the EU-15. ESIM does not cover all types of CAP expenditures, as noted before. The expenditures reported here, for both the EU and the CEEC-4, are considerably below actual CAP expenditure. Expenditures for the CEEC-4 of 7 billion ECU's means that their accession raises CAP expenditures by approximately 50 percent. For the year 2005, the predicted expenditure increase due to CEEC-4 accession is similar in percentage terms.

The percent increase of CAP expenditures resulting from enlargement is important under the formal budget guideline mechanism for the CAP. According to that mechanism, European Agriculture Guarantee and Guidance Fund (FEOGA) guarantee expenditure (in real terms) must not grow by more than 0.74 times the rate of (real) growth of GDP in the Union. In the past, that mechanism applied only to growth over time, and will continue to do so.

When the EFTA-3 countries acceded to the EU in 1995, the same mechanism was used across countries to calculate the additional FEOGA expenditures allowable due to enlargement in relation to the EFTA-3 countries' contribution to GDP in the EU. If that same principle were to be applied to CEEC accession, then FEOGA guarantee expenditures should not be allowed to increase by more than approximately 3

percent on CEEC enlargement (table 16). The additional CAP expenditures projected by ESIM would exceed that margin by far, the first important message of CEEC enlargement.

Three different conclusions can be drawn from the costs associated with accession of the CEEC-4:

• It is sometimes argued that the EU is unable to absorb the CEEC-4, or at least not their agriculture. For political and economic reasons, such a conclusion is untenable. The Union has the political will to take the CEEC-4 aboard, and CEEC-4 accession with agriculture not included is an unconvincing proposition.
• Overall, political and economic benefits of CEEC accession to the EU could be argued to be so large that side issues such as the CAP budget guideline and general considerations as budgetary concerns should simply be disregarded. The political difficulties that could be created in the member states from Brussels' need for more available finance, should not be underestimated. A cautious strategy would make sure that such difficulties do not reduce the political acceptability, in the general public, of CEEC accession.
• Another conclusion derives from the high budget burden that an extension of the post-MacSharry CAP to the CEEC-4 is likely to create, which is a good reason to consider more changes in the CAP. From many points of view this conclusion seems the most convincing.

A second type of message that can be derived from the budget results reported in figure 8 concerns the direction in which future changes of the CAP might go. A reduction of the level of price support would certainly be a step in the right direction. The price cuts considered under scenario 4 would not only save (in comparison with scenario 3) 2 billion ECU's in the CEEC-4, it would also save 3 billion ECU's in CAP expenditures in the existing EU.

Another related consideration is the CAP system of compensation payments and set-asides. As shown in figure 8, expenditures in the CEEC-4 under scenario 3a in 2000 and 2005 is some 3.5 billion ECU's less than under scenario 3. This saving is due both to less

expenditures (on export subsidies) due to nonintroduction of set-asides and to less expenditures due to nonpayment of compensation in the CEEC-4. Given that an expenditure of this magnitude is involved, the future of set-aside and compensation payments under the CAP may have to be reconsidered in the context of CEEC accession.

Third, before accession to the EU, the CEEC-4 have to finance their agricultural policies out of their national budgets. Hence, the budget figures presented in figure 8 can also be interpreted as showing expenditures to be borne by the CEEC-4 if they were to align their policies with the CAP without actually joining the EU.

For example, if the CEEC-4 were to adopt CAP price levels by the year 2000 without quotas, set-asides, or compensation payments (scenario 3a), then in aggregate they would have to finance export subsidies (net of import tariffs) at the rate of 3.5 billion ECU's. This figure would be considerably above expected expenditures under a continuation of their 1993 real prices in the base scenario. If accession were to take a few more years to materialize, then the CEEC's would have to continue to bear that expenditure burden out of their national budgets until they can finally join the EU. Given the difficulty of making any prediction regarding the date of CEEC accession, this would be a rather dangerous uncertainty for future agricultural policy in the CEEC's.

Likely EU Approaches to the CEEC "Agricultural" Problem

Based on the results obtained in this analysis, future accession by the Visegrad-4 countries (and, by implication, of other CEEC's), would affect agricultural markets and policy conditions in the EU significantly, much more so than accession by the EFTA countries. However, the exact type of the implications to be expected, and the situation for individual commodities, will depend on the nature of the CAP at the time the EU is enlarged. Three major alternative future strategies are conceivable for the CAP in the face of eastern enlargement of the EU.

Alternative Enlargement Strategies

The first strategy would be to exclude CEEC-4 agriculture from the CAP; the CEEC-4 would join the EU, but, through specific agricultural border measures, their agricultural markets and policies would be kept outside for a long, indefinite transition period. This strategy, though technically feasible, would be politically difficult to accept. Access to EU agricultural markets is one of the major economic benefits the CEEC-4 expect from joining the EU. Moreover, keeping CEEC-4 agriculture outside would mean that border controls, and hence non-implementation of the Single Market, would be required just for the sake of agricultural policies. Strategies that would allow the CEEC's to come aboard with their agricultural sectors would probably be more prudent.

A second strategy would be to maintain the CAP unchanged after the full implementation of the MacSharry reform and extend that policy fully to the CEEC-4, or scenario 3. In order to reduce the excessive extra-budgetary costs for the CAP under scenario 3, it would then be necessary to maintain, and possibly intensify, supply controls in the EU and to impose these controls on the CEEC's. Set-aside would also be required in the CEEC's, and production quotas would be implemented for sugar and milk.

To what extent the imposition of quotas on CEEC sugar and milk production would result in savings against the results presented here under scenario 3 depends on the quota levels that can be negotiated with the CEEC-4, a politically difficult problem in itself. Under this strategy it would be hard to exclude the CEEC's from compensation payments paid out of the EU budget. Exclusion of the CEEC-4 from the EU's financed compensation payments would not only be unfair in a distributional sense, but also distortive as disparate production incentives would be provided for agricultural producers in the west and the east of an enlarged EU.

It would also be essentially impossible to implement set-aside in the CEEC-4 if compensation payments were not extended, as the only incentive to participate in set-aside for farmers would be the loss of compensation payments resulting from nonparticipation in the

set-aside program. However, inclusion of the CEEC-4 in the MacSharry compensation payments would cost the EU significantly more than is saved by lower surplus production of cereals as a result of set-aside. Moreover, it is not really clear why compensation payments should be extended to the CEEC-4. Compensation payments are thought to compensate EU farmers for the loss in revenue resulting from the price reductions implemented as part of the MacSharry reform. Such price reductions will not occur in the CEEC-4 in the course of their accession to the EU.

This strategy would complicate the EU's and the CEEC-4's commitments to the GATT and the WTO. Alignment of agricultural policies in the Visegrad-4 countries with an unreformed, post-MacSharry CAP by the year 2000 would seriously threaten these countries' ability to honor their GATT commitments in agriculture. If the Visegrad-4 countries were to move their agricultural policies gradually toward an unreformed, post-MacSharry CAP (as assumed in scenario 3), they would likely violate a large part of their GATT commitments before the year 2000. Also, tariff bindings in the Visegrad-4 countries (except Poland) are below those of the EU and would not provide sufficient protection for moving domestic prices toward those in the EU. In addition, the higher exports from the Visegrad-4 countries that result from price alignment with the EU would not be consistent with many export subsidy bindings of the Visegrad-4 countries. Even if the Visegrad-4 countries were to pursue their policies in line with their GATT commitments before accession but then had to implement an unreformed CAP after accession, the enlarged EU would have major difficulties in the GATT negotia-

tions pursued under Article XXIV:6 under the customs union code. Compensation for trade damage, which the EU would likely have to offer its trading partners in the GATT, might simply be too high.

A third strategy for the CAP might be to reduce support prices further after the MacSharry reform, possibly to the point where export subsidies are no longer necessary in most years, such as in scenario 4. As part of this strategy, set-aside could be relaxed or eliminated, and quotas for sugar and milk could be abandoned if price cuts for these products were sufficient. Compensation could be paid for both past and future price cuts, but ideally any compensation would be decoupled completely from production. Moreover, turning over responsibility for compensation payments to member states would be more reconcilable.

This reform strategy, if announced and embarked upon in time, would set a completely different and more realistic target for future policies in the CEEC's. The CEEC's would be less tempted to raise their levels of protection and support if they knew the CAP would have to be reformed again after they joined the EU.

Under this strategy, compensation payments financed from Brussels would not necessarily have to be paid to farmers in the CEEC's. Compliance with GATT commitments in agriculture would be far less of a problem for both the EU and the CEEC's. Successful preparation in agriculture for a smooth incorporation of the CEEC's into the EU in the decade to come may require the EU to consider this strategy very carefully.[26]

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[26] The EU Commission (1995b) argued similarly in its Agricultural Strategy Paper, an important document issued after the present study was completed. For its projections of future market developments in the CEEC, as presented in the Commission's paper, the Commission relied partly on ESIM runs done specifically for that purpose. As both the policy scenarios and a number of assumptions used for those runs were different from those used for the present study, the results are not strictly comparable.

Forecast Balances for an EU-19

Given the results of national referenda and the announcement of Agenda 2000 by the European Commission, the new EU members will not include Norway, Switzerland, or Slovakia shortly after the year 2000 as assumed in this analysis. But, the consensus opinion at the time of this analysis was that Slovakia would be included in the first wave, leading to an EU-19. Although Cyprus, Estonia, and Slovenia are included in the first wave, their agricultures and populations are quite small relative to the other entrants and are not considered in this analysis. Following are brief analyses of grains and livestock balances of an EU-19, including Slovakia, under different scenarios.

Grains

The effects of the CEEC-4 on EU-19 production, consumption, and trade dominate the changes compared with the 3 EFTA countries that joined the EU in 1995. As mentioned above, higher prices for the CEEC-4 result in less consumption and more production of livestock products in scenario 3 compared with the base scenario. On the other hand, CAP reform results in set-aside, which lowers grain production in the CEEC-4 as well as the EU-15. Hence, grain production is lower when the CEEC-4 join the CAP than in the base scenario where they are not in the CAP. For the EU-19 as a whole, grain production is lower while grain consumption is higher in scenario 3 than in the baseline scenario, which leads to lower grain exports when the CEEC-4 join the EU (table 19).

The price of meat, significantly higher in the CEEC-4 under the CAP in scenario 3, leads to higher production and a significant increase in feed demand by the CEEC-4 compared with the baseline scenario. This increase in feed demand for grains, in addition to lower production as a result of set aside as dictated by 1992 CAP reform, leads to overall net exports of grains in the EU-19 in scenario 3 that are lower than in the base scenario.

Livestock

Higher meat prices for the CEEC-4 in an EU-19 lead to greater meat production, less meat consumption,

Table 19—EU-19 grain production, consumption, and net trade under alternative scenarios, 1989/91-2005

Year	Base	Scenario 3	Scenario 4
	Million tons		
Production			
1989/91	241.68	241.68	241.68
1995	222.49	224.14	224.12
2000	254.89	244.37	239.3
2005	280.46	268.72	263.04
Consumption			
1989/91	211.83	211.83	211.83
1995	210.27	211.90	211.89
2000	215.65	219.65	222.68
2005	218.80	223.3	226.43
Net trade			
1989/91	29.86	29.86	29.86
1995	12.21	12.84	13.03
2000	39.24	24.52	17.82
2005	61.65	45.63	38.81

Source: European Simulation Model

and, for the most part, greater net meat exports in an EU-19 for scenario 3 compared with the base scenario (table 20). This result holds true for all meat categories of beef, pork, and poultry. Net exports of beef and pork are marginally higher in 2005 in scenario 3 than in the 1989/91 base period, while net poultry exports are somewhat lower.

The results for livestock seem reasonable under the assumptions used for modeling. In practical terms, however, it is questionable whether the CEEC-4 would take over a substantial portion of the current pork market in the EU given quality differences and a limited international market. The results for beef and poultry do seem plausible both for the internal EU market and for the world market.

Implications for the EU-19 of Enlargement to the East

As stated before, scenario 4 represents a simple attempt to reduce the budgetary costs to the EU of absorbing the CEEC-4 into the CAP by reducing prices without compensation. Intervention prices are reduced for grains and livestock products—with the

Table 20—Production, consumption, and net trade of beef, pork, and poultry under alternative scenarios, 1989/91-2005

Year	Base Beef	Base Pork	Base Poultry	Scenario 3 Beef	Scenario 3 Pork	Scenario 3 Poultry	Scenario 4 Beef	Scenario 4 Pork	Scenario 4 Poultry
	Beef	Pork	Poultry	Beef	Pork	Poultry	Beef	Pork	Poultry
Production					*Million tons*				
1989/91	9.95	18.62	7.61	9.95	18.62	7.61	9.95	18.62	7.61
1995	9.36	18.00	7.93	9.45	18.30	8.00	9.44	18.20	8.00
2000	9.95	18.51	8.46	10.37	19.04	8.78	10.01	18.93	8.80
2005	10.45	18.81	8.72	10.90	19.40	9.13	10.42	19.28	9.15
Consumption									
1989/91	9.19	17.82	7.12	9.19	17.82	7.12	9.19	17.82	7.12
1995	9.80	17.66	7.72	9.79	17.80	7.76	9.78	17.71	7.77
2000	10.18	18.29	8.44	9.82	18.13	8.40	10.22	18.14	8.46
2005	10.36	18.56	8.79	10.01	18.44	8.74	10.43	18.46	8.80
Net trade									
1989/91	0.76	0.79	0.49	0.76	0.79	0.49	0.76	0.79	0.49
1995	-0.44	0.34	0.21	-0.34	0.50	0.23	-0.34	0.49	0.23
2000	-0.23	0.22	0.02	0.56	0.92	0.38	-0.21	0.79	0.34
2005	0.09	0.25	-0.07	0.88	0.96	0.40	-0.01	0.82	0.34

Source: European Simulation Model

exception of pork and poultry, the prices of which are set by the internal EU market. Beef and grain prices are reduced by approximately 15 percent by the year 2005 in scenario 4 while pork and poultry prices drop by 6 percent and 8 percent, respectively. Production of grains and livestock products decline as a result of the price decreases compared to scenario 3, while consumption increases.

The combination of lower production and higher consumption leads to lower net exports of all commodities in scenario 4 than in scenario 3 for the EU-19. Lower production and lower exports also result in

lower budget costs for the CAP, but farmers receive less total income. Livestock producers' net income will likely increase because prices for feed inputs have declined, although some beef producers will see a decline in net profit because price support has declined for beef. Pork and poultry producers would likely profit more than producers of other products because their feed input costs have decreased proportionately more than their prices have declined. In any event, the drop in feed prices would be more advantageous for pork producers than other livestock producers because pigs are more intensive consumers of grains than other livestock are.

Conclusions

It is important to recognize that this analysis was completed in 1994 without adjusting U.S. policies to the 1996 Farm Act and without anticipating the high world prices that resulted from the 1996 supply/demand situation. While these phenomena have not been taken into account in the short run, the results presented are likely to accurately reflect the most likely outcomes for the EU after the year 2000.

It is clear from the model results that the CAP, in its current form, will have to be reformed or modified significantly if it is to meet its GATT commitments and/or if it is to be enlarged to include the Central and Eastern European countries. The EU Commission, in its Agenda 2000, recognized this and called for further reform of the CAP through reductions in intervention prices of beef, grains, and dairy (similar to scenario 4 analyzed for this report). Regardless of what scenario is used—standing pat with present policies, lowering prices, or slowing technological growth—the CAP appears destined for reform once again, whether to meet its GATT commitments or to absorb the CEEC's.

The traditional EU reaction to short-term phenomena in agriculture is to devise short-term policies that create more long-term problems, a likely outcome of the problem of agriculture in EU enlargement to the east. However, the EU must take into account its future relations with its trading partners in the World Trade Organization (WTO) and the political and economic viability that the EU needs so desperately.

Recent declarations[27] by Guy Legras, Director General of the EU's Agricultural Directorate, indicate that the Commission is resigned to reforming the CAP not only to accommodate the east but to comply with the new GATT rules that will exert pressure on the CAP in the year 2000, if not before. Director General Legras also indicated that the change in U.S. farm policy played a role in pushing the EU to the realization that it will have to move to world prices.

The German Farm Ministry revealed the same conclusions in the press[28] but with more emphasis on the

need to accommodate eastern countries. The political desire of the Germans to incorporate the Visegrad-4 countries stems from the historical fact that a stable middle Europe is essential to German peace and prosperity. A stable middle Europe also augurs well for a politically stable and economically prosperous European continent. In addition, the Germans and other EU member states want to meet stringent fiscal requirements that would allow them to enter into the EU's single currency in 1999. Qualifying for membership in the single currency will require an imposition of tight fiscal policies, which are likely to rein in spending on the CAP.[29]

The absorption of the three EFTA countries into the CAP has been a relatively painless affair for all countries in spite of political and structural obstacles, but it was done with much anticipation and with countries that were economically and legally prepared for membership. The ease with which Austria, Finland, and Sweden joined the EU contrasts sharply with the agricultural "land mines" that face the entry of the Czech Republic, Hungary, Poland, and Slovakia. Nevertheless, the precedents set by the incorporation of the EFTA countries in 1995 represent the most likely conditions under which the CEEC's will join the EU.

The results of this analysis indicate that there would be high budgetary costs incurred by the EU if the CEEC-4 were allowed to enter under the current CAP and the threat posed to farmers in the west by farmers in the east of Europe. However, there are potentially high financial and political costs if the CEEC's are not absorbed into the EU in a way that is consistent with international agreements and the mutual interests of west and east Europe.

The financial costs of enlarging the EU to absorb the Visegrad-4 are calculable under various scenarios, but the incalculable political costs of not including the CEEC's in the EU are potentially more critical to a relatively stable, prosperous, and peaceful Europe than any other issue of the day. This is not to say that there are no political costs to be incurred by absorbing the Visegrad-4 because of reforms that must be made

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[27] *Agra Europe*, June 21, 1995.

[28] *Financial Times*, London, July 1, 1996.

[29] *Financial Times*, London, July 24, 1996.

to the CAP or because of increased competition from the east.

While the principal source of concern is the budgetary cost to the EU of absorbing the CEEC-4, specific agricultural sectors will be at risk in the current EU. Grains and oilseeds do not present a problem while livestock products from the Visegrad-4 clearly pose a threat to the EU according to ESIM results. While many unknowns surround this conclusion, including the ability of eastern European farmers to meet quality standards demanded by law and EU consumers, model results indicate that Central Europe will benefit more from exporting livestock products (principally pigmeat) than any other sector. Lower labor costs in the CEEC's will reinforce this tendency.

Various solutions to the dilemma that the EU faces for enlargement include not requiring the CEEC's to set aside land, which would allow the EU to forgo the costs of compensation payments. This would solve the budget issue but then would raise the issue of set-aside in the western EU. A likely outcome is the lowering of CAP intervention prices, which both helps on the budget side and could allow EU countries to export grains without subsidy. The possibility of using world prices as the guide to production decisions exists among many others, which helps explain the conundra facing EU policymakers as they tackle the enlargement issue in various institutional, political, and budgetary contexts.

Likely Conclusions for U.S. Agricultural Trade

What does all of this mean for U.S. agriculture? In a sense, the United States may be looking at an enlarged EU that will adjust its agricultural policies to a great extent as the United States would like to have seen at the last GATT negotiations, the Uruguay Round. U.S. agriculture is likely to gain world market share in exports as the EU lowers its prices to confront the GATT limitations and its own budgetary constraints. U.S. agricultural exports of bulk commodities to the rest of the world will most likely increase because of EU enlargement.

A more market-oriented and enlarged EU would seem to bestow distinct political and market advantages to U.S. agriculture because of the 1996 Farm Act. U.S. farmers will rely more heavily on world prices for their incomes as direct payments are gradually phased out. EU policy will also be more reliant on world markets, which should give the United States an opening to compete with the EU. U.S. agriculture is generally acknowledged to have a comparative advantage in bulk commodity trade, and will be able to exploit that advantage and export more where the EU is not able to supply future demand. Prices would be higher than they would be if the EU had not enlarged; quantities traded by U.S. agriculture would be higher for the same reason.

The EU does appear to have a comparative advantage in the production of high-value products (HVP). With lower prices in the EU as cited in scenario 4, the EU could become more competitive without subsidies in HVP trade. However, this advantage would be tempered somewhat by the increased intra-EU trade in the EU-19 with HVP's moving from west to east (with the likely exception of meats, where the direction is reversed). An increase in intra-EU trade of HVP's could remove some EU trade from the world market, allowing U.S. food companies to enter new markets.

References

Agra Europe (London) Ltd. *Agra Europe*. Tunbridge Wells, England. Various issues.

Agra Europe (London) Ltd. *C.A.P. Monitor*. Tunbridge Wells, England. Various issues.

Agra Europe (London) Ltd. *East Europe: Agriculture and Food*. Tunbridge Wells, England. Various issues.

Baldwin, R.E. "Towards an Integrated Europe." Draft. Geneva, 20 February 1994.

Bolin, Olof, and Birgitha Swedenborg (eds). Mat till EG-Pris?, SNS Förlag, Stockholm, 1992.

EU Commission. White Paper on CEEC Integration. DG-VI Brussels. December 1996.

European Commission. *Agricultural Situation and Prospects in the Central and Eastern European Countries, Summary Report*. Brussels, 1995a.

European Commission. *Study on Alternative Strategies for the Development of Relations in the Field of Agriculture Between the EU and the Associated Countries With a View to Future Accession of these Countries* (Agricultural Strategy Paper). Document CSE(95) 607. Brussels 1995b.

European Commission. *Die Lage der Landwirtschaft in der Gemeinschaft*, Bericht 1993. Brussels 1993.

Expert Group. *EC Agricultural Policy for the 21st Century*. "European Economy," Brussels, 1994 No. 4.

Gardiner, Walter. "The European Economic Area: Integrating the EC and EFTA." Paper presented at the IATRC Conference on "New Dimensions in North American-European Agricultural Trade Relations," Calabria, Italy, 20-23 June 1993.

General Secretariat of the European Council. "Report on the Results of the Negotiations on the Accession of Austria, Sweden, Finland, and Norway to the European Union." Brussels, 9 March 1994.

Hartman, Monica. "Implications of EU East Enlargement for the CAP." Presented at "CAP Reform: What Next?" Credit Conference in Nottingham, England, on March 26, 1996.

International Monetary Fund. *International Financial Statistics*. Washington, DC, var. issues.

Jackson, M., and J. Swinnen. *A Survey and Evaluation of the Current Situation and Prospects of Agriculture in the Central and Eastern European Countries with Emphasis on Six States with European Agreements*. Final Report for DG I of the European Commission. Leuven, 1994.

Jonasson, Lars. "Swedish Agriculture as a Member of the EEC: Economic Impact and Attitudes." Model results from SASM, May 1992.

Josling, T.E., and S. Tangermann. "Toward a CAP For the Next Century." Paper for European Policy Forum, London. Forthcoming.

Kettunen, Lauri. *Finnish Agriculture in 1993*. Maatalouden Talovdellinen Tutkimuslaitos, Helsinki, 1994.

Kettunen, Lauri (ed.). *Finnish Agriculture and European Integration*. Agricultural Economics Research Institute, Research Public 71, Helsinki, 1993.

Kola, Jukka, Juha Marttila, and Jyrki Niemi. "Finnish Agriculture in European Integration: A Farm Level Approach." *Ag. Science Finland*, 1 (1992).

Madell, Mary Lisa. *CAP Reform: A New Era for EC Agriculture*. Economic Research Service, U.S. Department of Agriculture, Agriculture Information Bulletin No. 674. June 1993.

Normile, Mary Anne. "Oilseeds," *Europe: Situation and Outlook Series. International Agriculture and Trade Reports*, Economic Research Service, U.S. Department of Agriculture, WRS-94.5. September 1994.

OECD. *Producer Subsidy Equivalent Levels, 1991.* Paris, 1993.

OECD. *Review of Agricultural Policies: Poland.* Paris 1995.

OECD. *Agricultural Policies, Markets and Trade in the Central and Eastern European Countries, Selected New Independent States, Mongolia and China— Monitoring and Outlook 1995.* Paris Cedex 16, France. June 1995.

OECD. *Agricultural Policies, Markets and Trade. Monitoring and Outlook 1994 in the Central and Eastern European Countries, the New Independent States, Mongolia and China.* Paris 1994a.

OECD. *Review of Agricultural Policies: Hungary.* Paris 1994b.

OECD. *National Policies and Agricultural Trade*, Paris, 1987, pp. 136-185.

Rickertsen, Kyrre. "Norwegian Agriculture and the EEC." Norsk Jordbruk of EF, Agricultural University of Norway, Aas, 1991.

Rickertsen, Kyrre, "Supply of Agricultural Products: Norwegian Agriculture and the European Community (EC)." Paper presented at the XXI International Conference of Agricultural Economists, Tokyo, Japan, 22-29 August 1991.

Schneider, Matthias. "Osterreichs Landwirtschaft auf dem Weg in den EG-Binnenraarter." *Landwirtschaft and EG*, WIFO, Monatsberichte 1/93.

Soares Fernando, Brito, Fernando Gomes da Silva, and Joao Mendes Espada (eds.) *EC Agricultural Policy by the End of the Century*, Wissenschaftsverlag Vauk Kiel KG, 1993.

Swedish Ministry of Agriculture. *The Agricultural Reform in Sweden: A Food Policy for the 1990s.*

Tangermann, S. "Aspects of Integration between Western and Eastern Europe: West Looks East." In Ritson, C. (ed.), *Proceedings of the Seventh Congress of the European Association of Agricultural Economists. European Review of Agricultural Economics*, Vol. 21, pp. 375-392. Berlin 1994.

Tangermann, S., and T.E. Josling. "Pre-Accession Agricultural Policies for Central Europe and the European Union." Study prepared for DG I of the European Commission. Göttingen, Stanford, December 1994.

Tracy, Michael. *Government and Agriculture in Western Europe: 1880-1988*, Harvester Wheathsheaf, London, 1990.

U.S. Department of Agriculture (USDA). "Enlargement Talks Begin with EFTA Countries." *Europe Agriculture and Trade Reports*, Economic Research Service, RS-93-5, September 1993.

USDA. "EFTA and EC Link to Form European Economic Area." *Western Europe Agriculture and Trade Report*, Economic Research Service, 1992.

USDA. "EU Admits High-Income EFTA Countries as Members." *Europe Agriculture and Trade Reports,* Economic Research Service, WRS-94-5, September 1994.

Wehrheim, Peter, "The Integration of the EFTA Memberstates Sweden, Finland, Norway, Austria, and Switzerland into the EC: Impacts on Agriculture." Paper presented at the IATRC Conference, "New Dimensions in North American-European Agricultural Trade Relations," Calabria, Italy, 20-23 June 1993.