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-

[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

[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.