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# EU Enlargement: Implications for New Member Countries, the United States, and World Trade

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## Abstract

This is part of a series of reports on the integration of the transition economies of Central and Eastern Europe (CEE) and the Newly Independent States (NIS) into global commodity markets. This report analyzes the likely impacts of European Union (EU) enlargement on production and trade in the CEE countries about to join the EU and impacts on U.S. trade with the enlarged EU. The report finds that many of the adjustments have already taken place as a result of preferential trade agreements signed between the EU and the acceding countries. The most dramatic changes after accession are likely to be significant increases in output of beef and feed grains by the CEEs and a small decline in wheat output by the enlarged EU. The United States stands to lose its poultry market in the CEEs, but could see slightly larger wheat exports.

**Keywords:** European Union, EU, Central and Eastern Europe, CEE, Poland, Hungary, Czech Republic, EU Enlargement, U.S. trade with Eastern Europe, grain, wheat, beef

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## **Transition Economies: Integration Into Global Markets**

This report—*EU Enlargement: Implications for the New Member Countries, the United States, and World Trade*—is the first in a series of e-outlook reports that examine different aspects of the integration of the transition economies of Central and Eastern Europe (CEE) and the Newly Independent States (NIS) into global markets. This report analyzes the likely impacts of EU enlargement on production and trade in the acceding countries and impacts on U.S. trade with the enlarged EU. The other reports in the series address Black Sea grain markets, NIS poultry trade, and changing patterns of food consumption. The analysis in these reports is based on new elasticity estimates and ERS baseline models.

During the transition process in the countries of the NIS and CEEs, arbitrary trade patterns dictated by the state gave way to new directions of trade determined by global market forces. As a result of these changes, many of the countries experienced rapid rises in meat imports, and some, notably Russia and Ukraine, became significant grain exporters. Trade patterns have also shifted as a result of 10 CEEs preparing for EU accession. Preparations for EU enlargement are also affecting the countries of the NIS, as CEE trade is diverted away from the NIS toward the EU-15.

All these forces together have had profound effects on U.S. agricultural trade as well. The United States lost what was once a huge grain market in the former Soviet Union. During the 1990s, the transition brought a rapid rise in U.S. poultry exports to Russia, Ukraine, Poland, and Romania to make up for lost grain markets. But since 2000, these exports are under increasing pressure, both from preparations for EU enlargement and increasing protectionism on the part of Russia and Ukraine, as they strive to build up their own poultry industries. Future U.S. trade with the region depends on increasing consumer demand for high value food products.

## Introduction

Ten countries—Poland, Hungary, Czech Republic, Slovakia, Slovenia, Estonia, Latvia, Lithuania, Malta, and Cyprus—are on track to join the European Union (EU) in May 2004. At the December 2002 Copenhagen Summit, the EU closed negotiations with the ten candidate countries and issued a formal invitation for them to join on May 1, 2004. The EU also decided that Bulgaria and Romania were not quite ready for accession, setting a target date of 2007 for them. April 16, 2003, marked the signing of the formal accession treaties. During the summer and fall of 2003, all the candidate countries except Cyprus held referenda to approve accession, and in all cases a majority of voters approved.

This enlargement of the EU, the largest in its history, will bring profound changes to Europe. The EU population will grow by 28 percent, with arable land increasing by nearly 40 percent. Grain area in the 10 candidate countries totaled 16 million hectares in 2000, equal to nearly half the grain area in the current EU-15. The EU-15 is already a larger agricultural producer in value than the United States. The EU-25 will be an even larger presence on the global agricultural market.

ERS has analyzed the impacts of EU enlargement on three of the largest Central and East European (CEE) candidate countries—Poland, the Czech Republic, and Hungary—as well as impacts on U.S. trade with the East European countries. The latest ERS analysis, presented in this report, suggests that for most commodities, CEE increases in output will not be nearly as dramatic as was projected in earlier analyses.<sup>1</sup> The largest changes likely to result from enlargement are potentially significant increases in output of feed grains and beef. In contrast, enlargement could lead to slight declines in wheat output by the three candidate

countries. Combined beef output increases significantly, leading to substantial exportable surpluses, but there are only small changes in pork and poultry output.

Impacts on world trade are likely to be small. Net exports of rye and barley may increase, and the enlarged EU could be a modest net exporter of corn. At the same time, net exports of wheat by the enlarged EU could decline. Enlargement could bring short-term losses in U.S. exports to the region. U.S. grain exports to the CEEs have fallen almost to zero since the early 1990s; after enlargement, U.S. wheat exports could rise once Poland adopts EU phytosanitary requirements, which are less strict than Poland's current restrictions. But the United States could lose a large poultry market due to EU sanitary requirements, which are more strict than those of the candidate countries. In the longer term, however, if CEE incomes rise, there could be opportunities for larger exports of other high-value products.

The enlargement process is now further complicated by EU plans to reform the Common Agricultural Policy (CAP). Reforms include cuts in intervention (support) and minimum prices for several commodities, including skim milk powder and butter, and the elimination of rye intervention. But the most important reform for CEE producers will be a conversion of direct payments—now partially coupled to production—to a single, decoupled farm payment. Furthermore, “cross-compliance” provisions will require producers to meet all EU veterinary, sanitary, phytosanitary, and animal welfare standards in order to receive that payment. This could make it difficult for the smallest farms to qualify for payments, and the result, in countries such as Poland, would be fewer and larger farms.

<sup>1</sup> See Cochrane (1999), Leetmaa et al. (1998), Liapis and Tsigas (1998), and Josling et al. (1988).

## Modeling the Impacts of Enlargement

ERS modeled the impact of enlargement on commodity markets using a set of partial equilibrium models known as the European Simulation Model (ESIM—see appendix). The models provide a 10-year forecast, with 2000 as the base year. The results are compared with the 2003 USDA baseline forecast, which does not assume enlargement. The main assumptions underlying this analysis were the following:

The three countries—Poland, Czech Republic, and Hungary—will join the EU in 2004 and immediately adopt all EU market support measures. They will receive Agenda 2000 prices for grains and beef.

Direct payments to the three CEE producers will be phased in over 10 years. In the first year, they will receive 55 percent of the payments now received by farmers in EU member countries. Supply controls will be set as agreed in the December 2003 Copenhagen Summit, where the EU and the 10 acceding countries reached a formal agreement regarding the terms of accession (see box, “[The Direct Payment Compromise...](#)” for further discussion.)

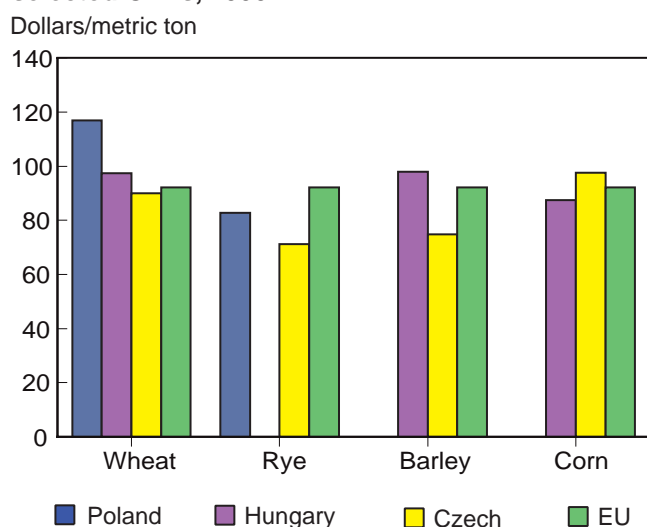
- Dairy and sugar quotas, as agreed in the Copenhagen Summit, will be in force for the full 10-year period.

- CEE producers will be subject to all set-aside requirements now in force in the EU.
- In each year, GDP of the three CEE candidates will be 3 percent higher in the enlargement scenario than in the baseline. This addition to GDP reflects the influx of EU Structural Funds after accession (see below for more discussion.)

### Narrowing Price Gaps Reduce the Market Impacts of Enlargement

Results in this report differ from those in earlier ERS analyses, which suggested large increases in CEE output of most commodities. More recent analyses by ERS and other institutions (EU Commission, 2003) suggest a much more muted output response for most commodities. The principal reason is that in recent years there has been considerable convergence between CEE and EU prices. In the early 1990s, producer prices in the CEEs for most commodities were far below those in the EU. Researchers therefore concluded that accession could lead to enormous increases in CEE output of both crop and livestock products. But the price gaps have narrowed considerably (figs. 1 and 2) Of particular interest:

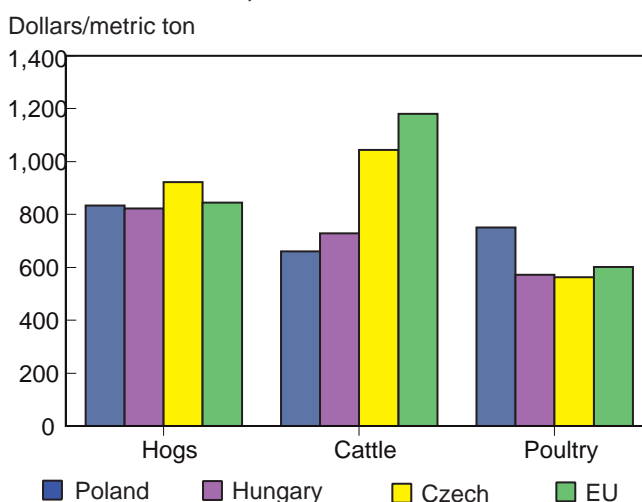
Figure 1  
**Farm-level grain prices in the EU and selected CEEs, 2000<sup>1</sup>**



<sup>1</sup>Rye price is not available for Hungary; corn and barley prices are not available for Poland.

Sources: Eurostat and Central Statistical Offices of Poland, Hungary, and the Czech Republic.

Figure 2  
**Live animal prices (farm level) in the EU and selected CEEs, 2000**



Sources: Eurostat and Central Statistical Offices of Poland, Hungary, and the Czech Republic.

- Wheat prices in Poland and Hungary were above the EU intervention price. The Czech wheat price was only marginally below the EU price.
- Corn prices in the Czech Republic were above the EU price. The Hungarian price was slightly below.
- Rye prices, on the other hand, were still substantially below the EU intervention price.
- Hog prices were nearly the same in the CEEs and the EU.
- Poultry prices in Hungary and the Czech Republic were just below the average EU price. However, Polish poultry prices were 10 percent above the average EU price.
- CEE cattle prices were far below the EU price.

There are many reasons for the convergence between CEE and EU farm prices, but the most important are:

- In 2000, the euro had fallen relative to the U.S. dollar, while the Polish, Czech, and Hungarian currencies had appreciated against the dollar. Since then, the euro has appreciated considerably against the dollar; CEE currencies have lost ground with respect to the euro, but have not depreciated as much as the U.S. dollar.

- As a result of the 1992 CAP reform, EU commodity prices declined in real terms over the 1990s. Agenda 2000 imposed further cuts in support prices, which took effect in 2001. Both sets of reforms led to lower support prices and a movement toward direct income support to farmers.
- During the 1990s, the CEEs, in an effort to align their policies with those of the EU, began to intervene strongly in some markets. Poland maintains an aggressive intervention program for wheat, rye, sugar, and dairy products. The Polish intervention agency—the Agricultural Market Agency (AMA)—also periodically conducts intervention purchasing of pork. The AMA also administers subsidized exports of sugar and pork. Hungary and the Czech Republic, on the other hand, have intervened more heavily in meat markets.
- Quality differences are important, particularly for pork. The prices used in the model were prices paid for the top grade of the EU grading system (known as EUROP). The grading system evaluates carcasses mainly in terms of lean meat content. In all three candidate countries, the average lean meat content has been increasing, and an increasingly higher share of pork meets the top three grades of the EU grading system.

# Impacts of Enlargement on Commodity Markets

The most significant commodity impacts of enlargement are found in the CEE grain and beef markets. Combined wheat output by the 3 CEEs falls, while output of feed grains rises. High EU intervention prices bring increases in CEE beef output, while output of other commodities remains largely unchanged. Details by commodity are given below: in each case ERS model results for the 2007/08 marketing year for crops and 2008 for livestock products are compared with the 2003 USDA baseline for the same year.

**Wheat.** By 2007/08, output declines in Poland by nearly 10 percent, compared with USDA baseline estimates (fig. 3). In the base year, Poland was supporting wheat at levels above those in the EU—as a result of high intervention prices and a system of bonuses to producers (see box, “[Support for Poland’s Wheat Market...](#)”)—and enlargement brings a 35-percent decline in Polish wheat prices. Wheat output increases in Hungary (fig. 4) and the Czech Republic (fig. 5) by 5 and 7 percent. Altogether, wheat output of the three countries is nearly unchanged. Exports from Hungary and the Czech Republic rise slightly, while Poland becomes a large (2.5 million metric tons) net importer.

**Feed grains.** In our modeling scenario, all three CEEs see large increases in barley and rye output (18 and 10 percent), since enlargement brings a substantial rise in the price of these grains in the CEEs. Exportable surpluses of both barley and rye increase significantly (figs. 3-5). Additional CEE barley exports do not add much to the total EU surplus, but, without CAP reform, the enlarged EU would have much higher surpluses of rye, adding to already large stocks.

Figure 3  
**Poland—Impact of accession on grain production, consumption, and trade**

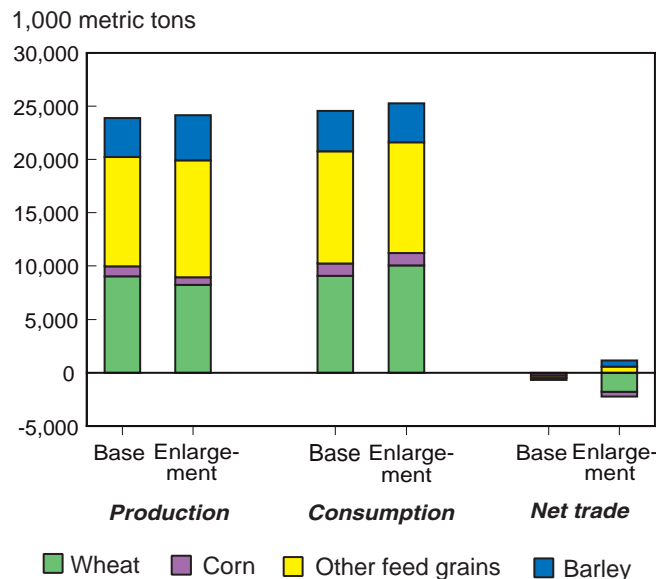


Figure 4  
**Hungary—Impact of accession on grain production, consumption, and trade**

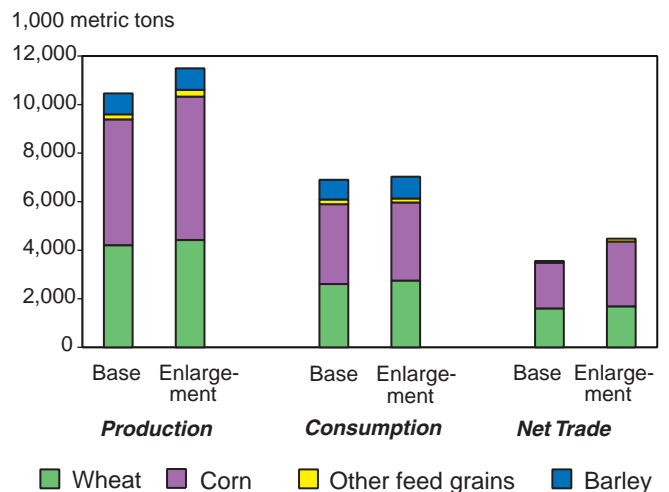
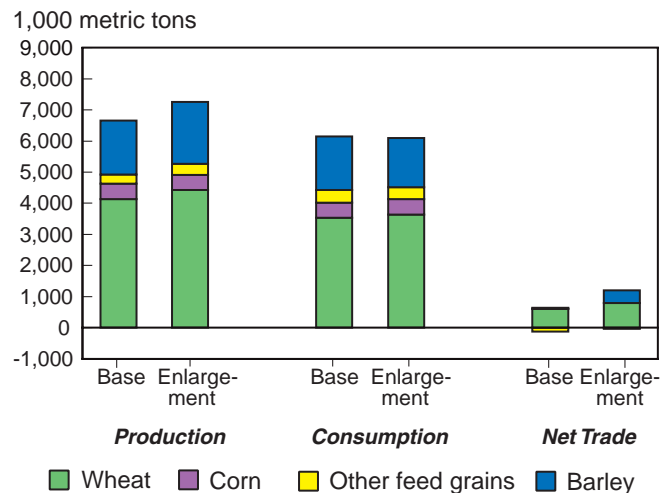


Figure 5  
**The Czech Republic—Impact of accession on grain production, consumption, and trade**



## Support for Poland's Wheat Market Will Decline After Accession

The Danish Research Institute of Food Economics recently analyzed EU enlargement using the Global Trade Analysis Project (GTAP) model, a general equilibrium model that takes into account income and intersectoral impacts. (ERS used a partial equilibrium model for the analysis in this report.) The Danish study also models all 10 acceding countries, while ERS analyzed only the three largest producers.

The most significant difference in the results is for the wheat market. ERS projects an overall decline in CEE wheat output, while the Danish study projects a 14-percent increase. The source of the divergence is differing assumptions about the Polish wheat market. As in the Danish study, ERS projects increased wheat output in Hungary and the Czech Republic. But ERS projects a significant decline in Polish wheat output, mostly because current support to Polish wheat producers is higher than EU support.

Poland's Agricultural Market Agency (AMA) sets a guaranteed minimum price for wheat, which in recent years has been higher than the Agenda 2000 wheat price (see fig. 1). In addition, the AMA pays producers a supplement (or direct payment) for each ton sold. In 2002, the supplement began at \$40 a ton and was scheduled to rise throughout the marketing year in order to encourage producers to store their wheat rather than sell immediately after harvest. After EU accession, the minimum price will fall, and the supplements will end. The direct payments that Polish producers will receive under the formula agreed to in the Copenhagen Summit will be considerably less than the supplement.

**Pork.** In Poland, 2008 pork output is nearly 4 percent higher under the enlargement scenario than in the baseline (fig. 6). Prices rise by less than 2 percent; the principal reason for the increased output is an 8-percent drop in the cost of feed. Pork output changes little in Hungary (fig. 7) and falls in the Czech Republic (fig. 8)—small increases in output prices are offset by rising feed costs. Consumption of pork rises slightly in all three countries, presumably the result of substitution from beef. Combined net exports from the three CEEs fall by nearly half.

**Beef.** Beef prices rise 13 percent in the Czech Republic, 72 percent in Poland, and 62 percent in Hungary. CEE cattle breeders will also be eligible for direct payments from the CAP budget, as agreed to in the Copenhagen Summit (see below for discussion.) Despite the higher price and direct payments, combined output of the three countries rises by just 10 percent. Beef output in the Czech Republic actually declines because higher prices and direct payments are offset by rising feed costs (fig. 8). In all three coun-

Figure 6  
**Poland—Impact of accession on meat production, consumption and trade**

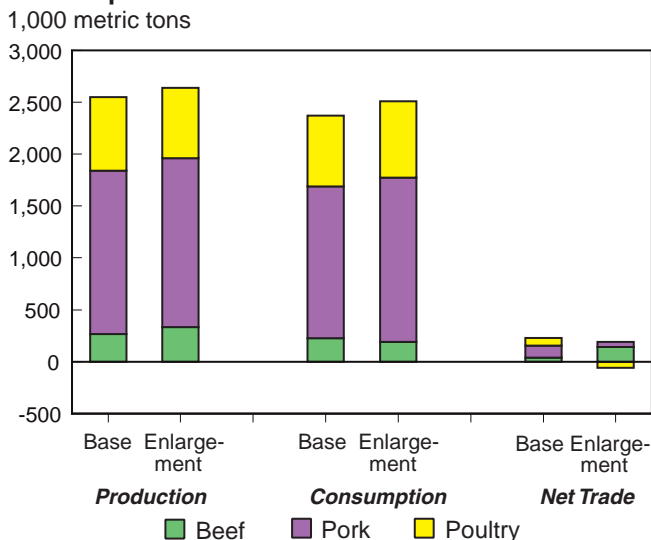
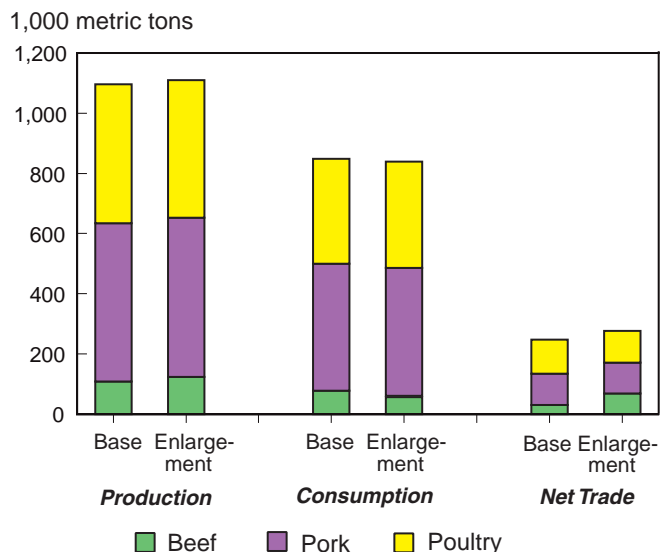


Figure 7  
**Hungary—Impact of accession on meat production, consumption, and trade**



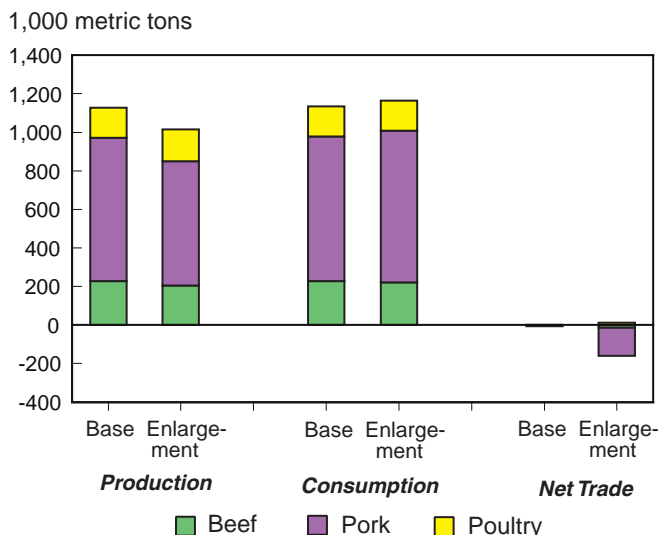
tries, most beef comes from dairy herds, as specialized beef herds are very small. The amount of beef coming from dairy herds will be constrained by EU dairy quotas, which mostly fix milk output at or even below current CEE levels. Dairy herds will decline further as milk yields increase. Therefore, increases in beef output will depend on CEE producers' ability to expand herds of beef cattle. EU direct payments for beef cattle will provide an incentive in this direction, but it will take some time before significant beef herds can be developed.

Combined beef consumption falls by 13 percent, leading to higher net exports. Beef consumption is already on the decline in the CEEs; it is not the preferred meat in the population's diets, and consumers are increasingly substituting poultry meat. Higher beef prices will likely accelerate this trend.

**Poultry.** Most CEE poultry output is chicken meat, but Poland and Hungary traditionally raise ducks and geese as well, and have expanded turkey production in recent years. Model results, however, focus only on chicken meat. According to our results, poultry output in the Czech Republic in 2008 (fig. 8) is 6 percent higher than the baseline. However, output falls in Poland and Hungary. Accession brings slightly higher poultry prices for Hungary, but these are outweighed by higher feed costs. The decline is largest in Poland since Poland's poultry price falls by 20 percent. Poland and the Czech Republic become net importers of poultry meat (figs. 6 and 8), and Hungary becomes a smaller net exporter.

Figure 8

**Czech Republic—Impact of accession on meat production, consumption, and trade**



**Oilseeds.** The dominant oilseed grown in Poland and the Czech Republic is rapeseed, and the principal oilseed in Hungary is sunflowerseed. All three countries tend to be net exporters of those oilseeds and their products. They are importers of soymeal. In the enlargement scenario, oilseed production of the three CEEs together falls by 7 percent. Oilseed prices change very little, and the steep increases in feed grain prices spur substitution out of oilseeds into grains.

**Dairy.** ESIM does not contain a detailed dairy block. Milk output is fixed by the dairy quotas assigned to each acceding country. It is assumed that milk yields continue to rise by 1 percent per year, and cow numbers are calculated by dividing production by the milk yield. Fluid milk is assumed to be a nontraded good, so demand equals supply.

The final quotas agreed to at the Copenhagen Summit were not much different from the original EU offer to fix quotas at 1995-99 average production for each candidate country. For Hungary and the Czech Republic, the milk quotas are very close to actual 2002 production, so there will be virtually no change in output after accession.

The Polish quota is 8.964 million tons, rising to 9.4 million tons in 2006, which is well below 2002 production of 12 million tons. However, the EU quota applies only to milk that is sold, either to dairies or directly to consumers. Of the 12-million ton output in 2002, only 7.2 million tons were sold to dairies. The remainder was sold directly to consumers, used for feed, or consumed on the many small farms that characterize Poland. Moreover, after 2006, dairies will only be allowed to purchase "extra class" milk, and they will all have to meet strict EU sanitary standards. An AMA official believes that in the initial years of accession, dairy plants meeting EU standards will find it difficult to purchase enough high-quality milk to fill the quota. How long producers who are barred from marketing their milk will continue to produce for home consumption is uncertain.

Officials in all three countries are worried that they will become net milk importers four to five years after accession. Poland is now a net exporter; the other two are self-sufficient. But per capita milk consumption is now well below the EU level, and officials expect that as consumer incomes rise, consumption will rise to the EU level. As long as the quotas are in place, the additional demand can only be met by imports.



## Impacts of Enlargement on Trade

To a large extent, many of the trade impacts of EU enlargement have already taken place. Thanks to trade agreements signed in 2000 and 2003, known as the “double zero” and “double profit” agreements, much of the trade between the CEEs and the EU is already completely liberalized. These agreements eliminated tariffs on many goods and created duty-free quotas for others. The 2000 double zero agreement provided duty-free quotas for pork and poultry trade and duty-free trade on a number of other goods. The double zero agreements excluded goods in whose markets the EU intervenes (grains, dairy, sugar, beef). However, the double profit agreements opened duty-free quotas for wheat, corn, beef, and dairy products and allow nearly free trade in fruits and vegetables.

Consequently, 95 percent of Hungary’s trade with the EU, for example, is already fully liberalized.

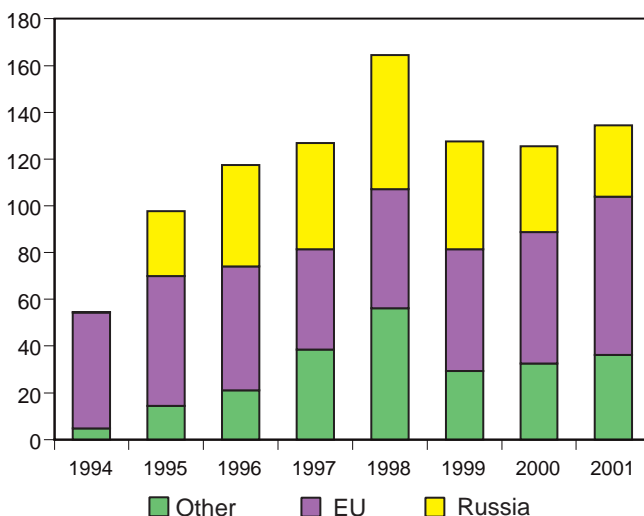
Many of the candidate countries have managed, since the agreements, to increase exports of both pork and poultry meat to the EU. For example, before its financial crisis of 1998, Russia accounted for a substantial share of Poland’s red meat exports. After 1998, Russia’s share was steadily replaced by exports to the EU (fig. 9).

Net pork exports by the 3 CEEs are projected to decline after accession. All three have subsidized exports of pork. The double zero agreements bar sub-

sidized exports to the EU, but in 2004 Poland has been subsidizing exports to Russia, Romania, and the Baltic States (angering pork producers in those countries). Hungary stopped subsidies on pork exports in 2001 to comply with WTO commitments. Our model assumes that the WTO-imposed ceilings on subsidies would be added to the EU’s ceilings. After accession, CEE exporters will be able to bid for EU subsidies, but they will have to compete with all EU exporters and may find themselves disadvantaged because of unfamiliarity with the procedures.

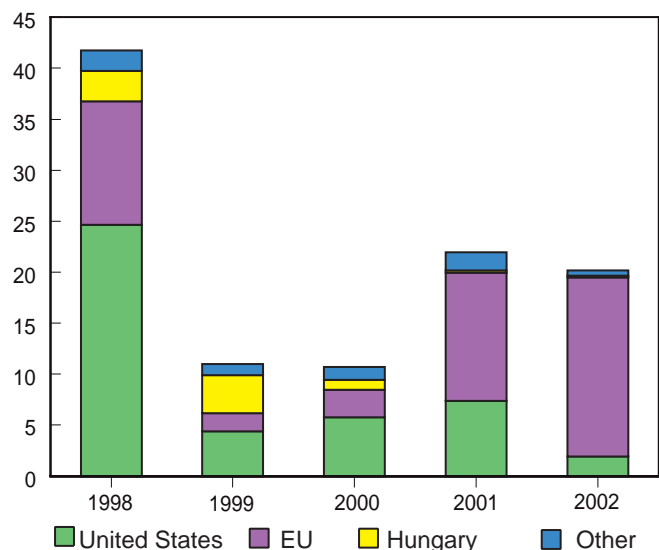
During the 1990s, Poland, Romania, and the Baltic States began to import significant amounts of poultry meat, mostly from the United States. In 1999, Poland raised its tariffs on poultry imports, and imports from all countries fell (fig. 10). Since the double-zero agreements—according to which the candidate countries (including Romania and Bulgaria) allow duty-free quotas for poultry imports from the EU—imports have resumed, but the U.S. market share has been almost entirely supplanted by the EU. The CEEs are projected to be net importers of poultry after accession, but current EU members will most likely continue to be the main suppliers. The EU currently maintains strict sanitary requirements on imported poultry, which effectively prohibits all imports of U.S. poultry. After enlargement, the new members will apply the same restrictions.

Figure 9  
**Poland—Exports of fresh red meat by destination**  
\$ million



Source: Global Trade Information Services, Inc., *World Trade Atlas*.

Figure 10  
**Poland—Imports of poultry meat by origin**  
\$ million



Source: Global Trade Information Services, Inc., *World Trade Atlas*.

## Impacts of EU Enlargement on U.S. Trade With CEE Countries

The United States stands to lose markets in the short term. But, again, much of this change has already taken place as a result of the double zero and double profit agreements. U.S. exports of grain and poultry to the CEEs have already declined considerably.

Currently, the EU bans all poultry meat imports from the United States due to a ban on treating carcasses with chlorine. If this issue is not resolved, then all acceding CEE countries will also ban U.S. poultry upon accession. According to the Bureau of the Census, U.S. poultry meat exports to Eastern Europe reached \$83 million in fiscal 2001, of which \$49 million went to Poland and \$36 million went to the three Baltic countries. However, close to 90 percent of those exports were transshipments to various countries of the Newly Independent States. So far, most U.S. and Polish officials believe these transshipments will be allowed to continue.

U.S. grain exports to the CEEs declined steadily throughout the 1990s (fig. 11), partly because CEE demand for feed grains dropped as CEE livestock sectors contracted. In addition, Poland and Bulgaria have implemented zero-tolerance policies for grain contaminated with ragweed seed, and U.S. grain shipments have not met that requirement. Also, many CEEs have barred imports of genetically modified corn as they seek to align their policies with the EU.

Wheat imports by the EU-18 are projected to rise slightly, and the United States will benefit from that. Poland will be the largest net wheat importer after accession (fig. 3). The EU does not maintain a zero-tolerance policy for ragweed seed. Poland has requested permission from the EU Commission to continue its ban on ragweed seed, and it is not known yet whether the EU will consent. If Poland is forced to give up this restriction, U.S. wheat exports to Poland will likely resume.

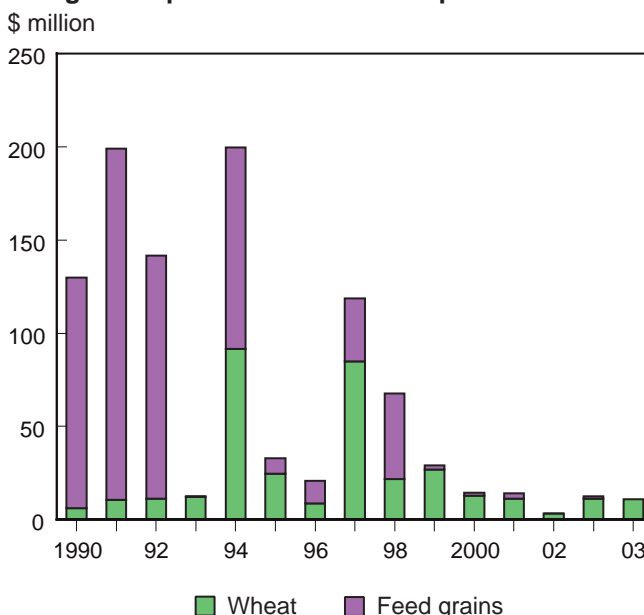
Though U.S. grain exports have declined during the transition period, U.S. exports of other products have grown. Significant among these are exports of nuts, raisins, popcorn, and other snack foods. Tariffs on most of these products will decline after accession, as will tariffs on wine, cigarettes, and tobacco. Rising incomes among the CEEs could stimulate increased

demand for these products and lead to new markets for high-value U.S. products.

Future U.S. trade with the new member countries depends in part on developments in the livestock sectors. The United States is an important supplier of animal genetics (bull semen, baby chicks, etc.) to the region. Market access for these products will not change with accession, and opportunities could expand if CEE livestock producers seek to improve their genetics in order to become more competitive in the enlarged EU. Model results suggest no immediate increase in EU imports of soybeans or meal. But demand for U.S. soybeans could expand in the longer term if the new members are able to expand livestock production.

U.S. exports of edible offals (liver, tripe, etc.) will be banned by future EU members due to EU concerns over BSE. This ban will also affect exports of pet foods and other products containing these animal parts.

Figure 11  
U.S. grain exports to Eastern Europe



Source: USDA, *Foreign Agricultural Trade of the United States*

## Impact of EU Enlargement on CEE Consumers

On the demand side, enlargement will bring more than 100 million new consumers into the EU. Currently, incomes of most CEE consumers are much lower than those of EU consumers, and to the extent that enlargement brings higher food prices, there will be negative impacts on CEE consumers. However, in the short term, significant increases in food prices are unlikely.

Food prices vary widely across the current EU members. According to data from the Economist Intelligence Unit, 2002 food prices in cities such as Berlin, Lisbon, and Madrid were very close to prices in Prague, Budapest, and Warsaw, while prices in Paris and Vienna were much higher. Moreover, the cost of raw agricultural products is only one factor contributing to the final retail price. The costs of labor, energy, building rents, and the like are also important. Land

and labor are currently much cheaper in the CEEs than in the EU-15, and it will be a number of years before these costs catch up to the current EU.

The negative effects of higher food prices could be offset if accession brings more employment and higher incomes to the CEEs. Demand for high-value, processed foods in the CEEs is currently limited to select wealthy citizens in urban areas, but this demand is already rising in larger East European cities. To the extent that EU rural development and structural assistance brings higher employment and income to rural areas, this demand will increase. Accession is also likely to bring more foreign direct investment to new member countries, which could also bring new and higher paying jobs to the region.

## **The Direct Payment Compromise What Does It Mean for CEE Producers?**

One of the most contentious issues during accession negotiations was the level of direct payments that farmers in the new member countries will receive under the CAP. These payments were introduced in the 1992 CAP reform in an effort to compensate producers for the price cuts that were imposed. These are only partially decoupled from production decisions, since producers must produce something in order to receive the payments. Two sets of direct payments were considered in the ERS analysis:

For arable crops—that is grains and oilseeds—EU producers receive a per-hectare payment calculated as a per-ton amount multiplied by a so-called reference yield. The reference yield is defined for each region based on historical average yields for that region. These payments are also subject to a regional area ceiling, again based on recent historical averages.

There is a complex array of payments for beef cattle. A suckler cow premium is paid once yearly per cow. A premium is paid once in a lifetime for bulls, twice for steers. A slaughter premium per animal is paid at slaughter. All these premia are limited by regional herd ceilings based on historical averages. The premia for suckler cows and male bovines are also subject to a maximum stocking density (number of animal units per hectare).

These payments were intended to be decoupled from production decisions, but in fact they do have some influence on production decisions. A farmer cannot receive arable crop payments for more hectares than were under cultivation during the reference period, but if he plants less than the base area, he will receive payment for only those hectares currently planted to those crops.

Because of the budgetary burden, EU negotiators were reluctant to provide the full range of direct payments to CEE producers. After a long, intense negotiation process, CEE and EU negotiators reached a compromise on direct payments at the Copenhagen Summit of December 2002.<sup>1</sup> Payments to farmers in the new member countries will be phased in over 10 years; the EU will provide only 25 percent of the payments from the CAP budget during the first year, rising to 30 percent in 2005, 35 percent in 2006, and 100 percent in 2013. However, national governments will be allowed to top off these payments by a maximum of 30 percent each year, so that payments during the first year of accession could be as much as 55 percent of what current EU farmers receive. CEE governments will be allowed to fund the extra 30 percent in part by diverting up to 20 percent of rural development funds that the EU will provide after accession. But they will need to match all such funds with additional funds from their own budgets.

Serious disputes arose during accession negotiations about the various supply controls imposed by the CAP. EU policy imposes dairy and sugar quotas. Direct payments are tied to historical “reference” areas, yields, and herd levels. The original EU position was that these controls would be fixed at 1995-99 averages for each country. CEE negotiators requested higher quotas and higher base areas, reference yields, and herd sizes, insisting that these be based on potential production rather than recent actual production.

In the end, the EU did not compromise very much on supply controls. Final quotas are only marginally higher and, in a few cases, actually lower than the original EU offers. The EU agreed to minimal compromises on sugar, isoglucose, and dairy quotas. In particular, the EU agreed to a “milk quota reserve” that will be added to each of the new members’ dairy quota in 2006. This reserve is intended to compensate for an increase in

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<sup>1</sup> The negotiation process is described in Cochrane (2004). Further discussion can also be found at [www.ers.usda.gov/briefing/Poland](http://www.ers.usda.gov/briefing/Poland) and [www.ers.usda.gov/briefing/Hungary](http://www.ers.usda.gov/briefing/Hungary).

retail milk demand that is expected to result from a decrease in onfarm consumption as farm populations migrate to urban areas.

The compromises agreed to at the Copenhagen Summit will have some impacts on commodity production. The effect of direct payments can be seen in the model results described above. For example, enlargement brings about a small increase in wheat output in Hungary despite lower prices. To further test the impacts of direct payments on production, ERS modeled a scenario in which CEE producers receive payments according to the country requests during negotiations (100 percent in the first year of membership and CEE-designated reference areas and yields.) In each scenario, combined grain and oilseed area reaches the ceiling, and output rises accordingly.

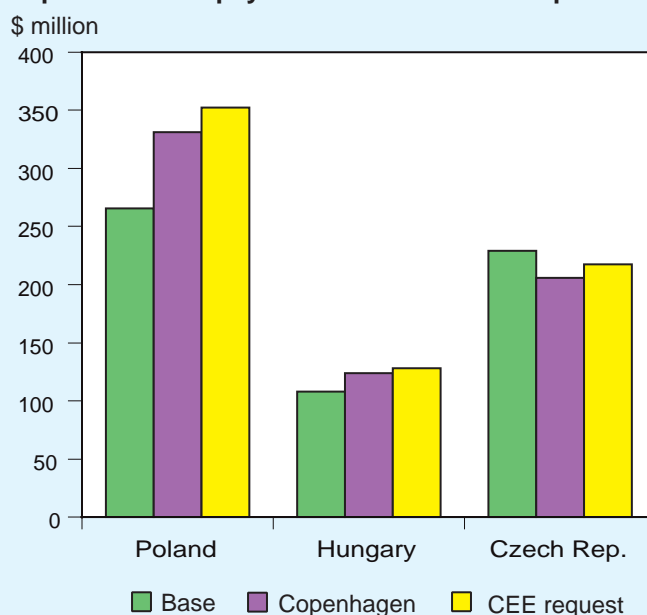
In the beef sector, results suggest that the levels of per-head payments for male bovines and suckler cows do not have much impact on beef output. The beef that can be produced from the animals eligible for the premia is less than baseline output, so these payments will not influence producers' decisions at the margin. Slaughter premia, on the other hand, may have some influence on production decisions in Poland and the Czech Republic since the beef produced from animals eligible for these premia exceeds current production in both countries. The second (CEE-request) scenario brings about slightly higher beef production (see figure). But the additional output is very small, and in the Czech Republic, beef output remains below that in the baseline. In the end, the influence of the payments is dwarfed by the impact of the increased prices.

### ***Impact of Direct Payments on CEE Beef Output***

The Copenhagen agreement gave each new member the option of allocating the portion of direct payments that will come from the EU budget according to a "simplified scheme" during the first 3 years of membership. According to the simplified scheme, governments can calculate the payments that all farmers together can receive and allocate the money to all farmers based on farm size, regardless of actual production. However, the top-off payments from the national budgets must be allocated according to actual herd levels and area planted to eligible crops.

Since the announcement of the CAP reforms in June 2003, nearly all the candidate countries have announced they will use the simplified scheme. Payments are thus still partially coupled, but less so than under the traditional payment scheme. CEE governments have not yet decided whether or not payments will be 100 percent decoupled after implementation of the reform.

**Impact of direct payments on CEE beef output<sup>1</sup>**



<sup>1</sup>The graph compares the ERS baseline, the agreement reached at the Copenhagen Summit, and a scenario in which the CEEs receive payments according to country requests submitted during the negotiations.

## CAP Reform and Enlargement

On June 26, 2003, the EU Ministerial Council approved some important reforms to the CAP. Some of the reforms will directly affect intervention prices received by EU producers:

- The intervention system for rye is eliminated.
- The intervention price for rice is cut by 50 percent, and intervention purchases are capped at 75,000 tons for the entire EU.
- Cuts in intervention prices for butter (25 percent) and skim milk powder (15 percent)—with partially decoupled compensation payments to farmers—will be phased in over 2004-07. Dairy compensation payments will be converted to the single farm payment by 2008. Intervention purchases of butter are capped and phased in over 2004-08, remaining at 30,000 tons from 2008 on.

The model results presented in this report did not incorporate CAP reform. But it is likely that the commodity impacts of CAP reform on the new member countries will be minimal. The principal effect will be a reduction in rye surpluses. With the elimination of intervention in rye markets, CEE rye output will likely decline. But what will CEE producers do with the land that would be planted to rye under the current CAP? Since cross-compliance provisions will require that producers keep the land in good agricultural condition, producers may want to keep the land under cultivation. Some might plant more barley. Polish farmers might increase rapeseed output. On the other hand, Polish farmers can convert the land to pasture and still receive the payments. The smallest farmers may find it most profitable to do exactly that.

More analysis is needed to determine the impacts of the proposed cuts in dairy support. For many CEEs, the dairy quotas agreed to at the Copenhagen Summit are less than current fluid milk output. CEE milk output will be severely constrained, so much so that the proposed cuts in support prices for butter and skim milk powder may not constitute any further constraint.

**Changes in direct payments.** The most important reforms affect the system of direct payments that the EU Commission provides to producers (see box, “[The Direct Payment Compromise...](#)”). The CAP reform calls for the decoupling of all direct payments and

consolidation of these payments into a single farm payment (SFP). Single-farm payments will be based on the producer’s historical payments. Member countries will have the option to retain partial coupling of some of these payments:

- For arable crops (grains and oilseeds), member countries may opt to retain up to 25 percent of payments as partially coupled payments. Countries may designate specific regions within countries for partial coupling and use up to 10 percent of the national ceiling of historical payments to top off such payments. Countries may phase in payments beginning in 2005 or no later than 2007.
- Beef payments may remain coupled in one of the following ways: (1) up to 100 percent of the premium for suckler cows and up to 40 percent for the slaughter premium (except calves), (2) up to 100 percent of the slaughter premium (except calves), or (3) up to 75 percent for bovine males. The slaughter premium for calves can remain coupled up to 100 percent.

In anticipation of the reform, most EU candidates have now chosen to apply the simplified scheme for allocating direct payments, but the payments will still be partially coupled (see box). Candidate countries have not yet decided whether they will retain any degree of coupling after the reform is implemented.

As a result, commodity impacts of accession in the CEEs may be less than ERS model results suggest. Decoupling of payments will reduce incentives to plant grains and oilseeds, but the ERS scenario suggests that the effect will not be great. The reference area assigned to each country at the Copenhagen Summit will continue to impose a ceiling on area planted to grains and oilseeds, but area could fall below that level if producers decide to convert it to pasture or simply plow the land and plant nothing. Decoupling of beef payments could lead to lower beef output than model results suggest. However, the impact of the coupled payments was dwarfed by that of the higher EU intervention price. CAP reform will not affect the intervention beef price, so CEE beef output can still be expected to expand.

Still, some provisions of CAP reform could hurt CEE producers:

**Cross compliance.** CAP reform will require farmers to comply with the full range of EU environmental, food safety, and animal welfare requirements in order to receive direct payments. Farmers will be required to keep their land in “good agricultural and environmental condition.” Failure to comply will result in a reduction of payments. Many CEE producers do not currently meet all these requirements. Upgrading their farms will require large investments, and smaller farmers do not have the necessary capital. The EU pre-accession funds currently available could be used for such improvements, but stringent co-financing requirements put those funds out of reach for many farmers.<sup>2</sup>

**Modulation and financial discipline.** CAP reform calls for a gradual reduction in direct payments (referred to as modulation) beginning in 2005. This timing applies only to the current EU-15. EU Commission documents stipulate that “reductions in direct payments will not apply in the accession states until direct payments reach EU levels.” According to the Copenhagen agreement, direct payments to CEE farmers are to be phased in over 10 years, with CEE farmers receiving only 25 percent of the payments from the CAP budget in the first year. CEE governments may top these off by up to 30 percent per year. Thus, the reductions will not take effect until 2010 or

2013, depending on whether governments top off the payments.

However, farms with an income under 5,000 euros will be exempt from payment reductions. This provision will benefit Poland, where most farms remain under that ceiling. But it could discourage the farm consolidation that EU officials insist is essential if Polish agriculture is to become competitive.

**Rural development.** Funds saved through modulation will be diverted to rural development. Eighty percent of the funds generated in each member country will remain with that country. The remainder will be allocated among all members according to agricultural area, agricultural employment, and per capita GDP. These criteria could benefit the new members, especially Poland. Potentially, these funds could help accelerate necessary restructuring in the CEEs.

But much of this money is to be used to finance compliance with new standards regarding food safety, animal welfare, and environmental quality. “Aid will not be payable where an individual farmer is not respecting standards already included in national legislation,” according to the EU Commission. CEE farmers who do not manage to meet existing standards may lose out on much of this additional money.

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<sup>2</sup> The EU pre-accession funds finance only 50 percent of the cost of a project. In addition farmers and processors applying for pre-accession funds must pay all the costs up front and receive the 50 percent only after completion of the project. For further information, see the European Union Briefing Room on the ERS website ([www.ers.usda.gov/briefing/EuropeanUnion/IssuesEnlargement.htm](http://www.ers.usda.gov/briefing/EuropeanUnion/IssuesEnlargement.htm))

## Conclusions

After a decade of price and policy convergence between the EU and the CEEs, short-term impacts of EU enlargement on EU commodity output and world agricultural trade will not be nearly as large as was expected in the early 1990s. In the longer term, accession can bring many benefits to the candidate countries. Consumer incomes will likely rise, and pressures for restructuring will lead to more efficient agricultural sectors in the CEEs.

However, accession could bring hardship to many small farmers and processors in the CEEs. Processors that cannot meet strict EU standards will be forced out of business. Farmers who do not meet EU standards may continue producing for home consumption and sale in local green markets. Under a strict interpretation of cross-compliance requirements, these farmers

will not be eligible for payments. It remains to be seen how quickly the CEEs can generate new employment for those displaced from agriculture. It is for this reason that while the majority of people in the CEEs have voted in favor of EU membership, a sizable segment of the farming population is bitterly opposed.

EU enlargement will also bring new challenges to U.S. agricultural exporters. Wheat exports to the region may expand, but U.S. poultry exports to the new member countries will be blocked unless EU sanitary regulations are relaxed. The principal hope for U.S. agribusiness will be an expansion of consumer demand for high value foods that will follow income growth in the new member countries. U.S. exporters of protein meal and animal genetics may also benefit from any long term restructuring in the region's livestock sectors.



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## Appendix: Modeling Accession Using the ESIM Models and the Country-Commodity Linked System (CCLS)

The models used for the analysis were the ERS versions of the European Simulation Models (ESIM—separate, stand-alone models for Poland, Hungary, the Czech Republic and the EU-15), combined with the ERS Country-Commodity Linked System (CCLS) that is used for the annual USDA baseline. The ESIM models are partial equilibrium models, in which world prices are exogenous (externally provided) both in the historical and projected years. Because Europe's policies and trade have a major impact on world prices, the models directly involved in this enlargement scenario are placed in the larger context of a world agricultural commodity modeling system—the CCLS. There, price-responsive supply, use, and trade by other country models and the system's simultaneous equilibration of world prices and trade provide a more complete picture of the effects of accession.

### Linked System

The Country-Commodity Linked System (CCLS—also known as the linker) combines 43 country/region models and determines equilibrium prices and trade to simultaneously clear 24 agricultural commodity markets and enable scenario projections by year, for 10 years into the future. The models cover supply, use, prices, and policies. The system as a whole contains about 15,000 equations. The system has been used in a number of scenario analyses.

**Software.** The foreign country models reside in spreadsheets, while the U.S. and rest-of-world models reside in the Fortran programming language. A linking procedure combines the models even though they reside in disparate software packages, appropriate to the needs of the respective analysts. The linker introduces large numbers of scenario shocks and provides various forms of output.

**Focused coverage.** The linker uses a standard set of countries and commodities and enables the user to focus on the country-commodity blocks of greatest importance. For a given country model, not all commodities may be covered. On the other hand, specific commodities such as palm oil may be modeled and then summed to give that country's contribution to a

commodity aggregate such as other oils (oils other than soybean oil, rapeseed oil, or sunseed oil). The use of rest-of-region models and rest-of-commodity-aggregate blocks allows correct world totals. The commodity markets include feed grains (corn, sorghum, barley, and other coarse grains); food grains (wheat and rice); oilseeds and products (soybeans, rapeseed, sunseed, other oilseeds, and the corresponding meals and oils); other crops (cotton and sugar); and animal products (beef and veal, pork, poultry, and eggs).

### Model Description

**Exogenous/Endogenous.** The models generally have exogenous (externally provided) macroeconomic and resource data and projections, but endogenous (internally calculated) prices, quantities, and policy behavior.

**Parameters.** The foreign country and region models mostly use synthetic elasticities. Foreign country model elasticity sources include economic literature, estimation, and other models. The U.S. model, FAPSIM, is a large econometric model with estimated coefficients and representation of a number of U.S. policies. Most of FAPSIM's equations are linear.

**Functional form.** The model equations vary across countries and commodities, although there are many similarities. The model's behavioral equations typically use a growth rate form (also referred to as a dynamic Cobb-Douglas or linearized Cobb-Douglas form). That is, the growth rate in a dependent variable equals the sum across explanatory variables of the growth rate in each explanatory variable, scaled by the responsiveness of the dependent variable to that explanatory variable. For instance, the growth rate in wheat area might equal the growth rate in the lagged price of wheat, scaled by the elasticity of wheat area with respect to the lagged wheat price, plus the growth rate in the lagged price of corn, scaled by the elasticity of wheat area with respect to the lagged price of corn, and so on, for other explanatory variables. The use of this growth rate formulation means that each year's level of the dependent variable serves as a type of

intercept for levels in the following years. The advantage of this approach is that it does not require separate estimation or calculation of intercepts. On the other hand, results are strongly influenced by initialization year levels unless adjustments are introduced in later years.

**Prices.** In general, prices and values in the models are expressed in real units. The models interact in part through movements in reference prices, which are each country's perception of world prices. For most commodities, reference prices are the same across countries, but they may differ for wheat, rice, barley, and beef due to quality and policy differences among countries. Border prices are the reference prices as converted to domestic currency units. Import and export prices are the border prices as adjusted by tariffs and any internal transportation costs.

Producer prices may be functions of import or export prices, depending on whether a country mainly is a consumer and importer, or a producer and exporter. If the commodity in that country has impediments to trade—perhaps because of government policies—inadequate transportation or quality problems, then imports and exports may not be the residual variables that clear the markets. (The time horizon for this discussion is several years, when stock changes generally are not sustained long enough to clear markets.) If there are significant impediments to trade, then a domestic price, typically the producer price, may adjust to set supply equal to use, while imports and exports may be direct functions of domestic versus trade prices, or may be exogenous. Consumer prices typically are modeled as paralleling producer prices.

**Feed demand.** The demands for grains and protein meals for animal products are calculated by using the amount of each animal product being produced, and coefficients for the amount of grain and protein meal needed per unit of each animal product. The total demand for grain or protein meal by animal products is used as an explanatory variable in the feed demand equation for each feedstuff. The cost of feed per unit of each type of animal product is calculated from the aggregate prices of grains and meals, and coefficients for the amounts of grain and meal required per unit of each animal product. The feed costs are used as explanatory variables in slaughter or production of each animal product.

**Production.** Crop area in general is a function of lagged prices or of expected returns. Expected returns

are the product of expected (lagged) prices and expected yields, which may be trends or lagged endogenous yields. Yields may be a function of prices or trend only. Animal production may be directly calculated from prices or may be the product of endogenous slaughter and yield, or may depend on more detailed calculations of animal inventories by age and gender.

**Stocks.** Stocks may be a fraction of production or consumption, or a function of prices, or a more complicated function of policy goals. In most cases, stocks depend on consumption, but recently, for some countries the stock functions have been changed so that stocks depend on prices. Making stocks depend on prices also makes solution more stable for those country/commodity blocks in which domestic market-clearing prices are calculated. In the European Union, beef stocks are adjusted to meet policy goals, rising if the market price falls below the intervention price.

## ESIM Models

The models for the European Union-15 (EU-15), Czech Republic, Hungary, and Poland differ in certain ways from the typical model formulation because of policies and production practices that are specific to the region.

**Feed demand.** In a typical model, the feed demand for corn depends on the feed demand for total grains. Corn (the predominant feed in the United States) can be fed to all of the animals modeled in the CCLS. However, the feeds that predominate in Europe, such as barley or rye, may not be successfully fed in large quantities to all animal types. Therefore, the Europe models attempt to distinguish which feeds go to which types of animals. These technical coefficients are endogenous, responding to the prices of the various feeds.

**EU-15 area and prices.** In the EU-15 model, the area harvested for each crop is scaled up or down so that the sum of crop areas equals an exogenous policy-determined base area total. Prices for the grains adjust until subsidized exports meet WTO trade bounds. However, when the world price for a commodity is high enough in terms of Euros, the European Union may be able to export without subsidy, avoiding the WTO trade bound for that commodity.

**EU-15 beef.** Beef production in Europe is more likely to be a byproduct of dairy production than is the case

in the United States. The EU-15 model describes beef exports as a function of prices. Beef commercial stocks in the EU-15 model respond to prices, while government stocks respond to the gap between the beef price and the beef intervention (government support) price. The market price equilibrates supply and use.

## Modeling Enlargement

**Enlargement prices and trade.** The enlargement scenario links the EU-15 model directly to the Czech Republic, Hungary, and Poland models. Prices in the three Central and Eastern European (CEE) country models are linked to the endogenous prices in the EU-15 model, as adjusted by exchange rates and by the scenario removal of pre-enlargement discrepancies between prices in the CEE countries and those in the EU-15. Export levels for grains (imports for corn) from the CEE countries are relayed to the EU-15 model's grain price equations, which also are presented with WTO trade bounds enlarged by accession.

**Policies in the candidate countries.** The enlargement scenario also involves setting CEE compensation payments for field crops. EU-15 set-aside rates are applied to the CEE countries. This scenario includes an increase in the EU-25 oilseed area to the limit that was set out in the 1994 Blair House Agreement between the EU and the United States (which limits increases in EU oilseed area receiving subsidies and calls for a penalty to be imposed on producers who exceed that limit). In the scenario, policy-based CEE field crop area totals are specified exogenously, as are program yields. CEE income levels are assumed to increase because of EU rural development policy payments.

**Dairy.** Scenario CEE milk production levels are exogenously determined on the basis of the accession agreement. The milk production levels in turn imply dairy herd numbers.

**Beef headage ceilings.** Beef production in the acceding CEE countries changes in the scenario because of

various "headage" payments applied to certain categories of cattle. The payments include a slaughter premium for calves, a slaughter premium for adult cattle, a male bovine premium, and a suckler cow premium. Each payment applies to a certain maximum (ceiling) number of cattle of the specified type. Since each CEE model has just one beef production equation, it is necessary to translate the headage ceilings into their equivalent in total beef production, using the fact that a payment-eligible category of cattle is produced at the same time as other categories of cattle.

**Beef payments.** It also is necessary to translate the payments into their impact on the overall price of beef at a given level of total beef production. Beef obtained from the payment-eligible category is a calculable fraction of total beef production. Returns to the average beef producer are increased by a given type of payment, but the producer does not receive the payment on all cattle. The increase in returns per unit of total beef production, resulting from a payment to a fraction of total beef production, requires weighting the payment by the fraction of total beef production eligible for the payment.

**Beef production.** Finally, in a given CEE model, we use the payment ceilings in terms of total beef production and the payment-based increases in returns per unit of total beef production to enhance the beef production formulation. The payment ceilings are ordered from smallest to largest. Within the smallest ceiling, all four weighted headage payments apply. At the largest ceiling, only the weighted payment with the largest ceiling applies. Four additional production equations are added. The first equation includes all four weighted headage payments in the revised beef "price." The last production equation includes in the revised beef "price" only the weighted headage payment corresponding to the largest ceiling in terms of total beef production. Beef production above the largest ceiling in terms of total beef production uses the original production equation, since no payments apply. Tariff-rate quota (TRQ)-type equations are used to select one of the five production equations, depending on the level of total beef production.