CEEC Accession to the EU:
A General Equilibrium Analysis

Peter S. Liapis and Marinos E. Tsigas

Abstract

This chapter examines the economic implications of European Union enlargement on EU members, the United States, and the rest of the world. Our findings include the following: economic welfare in the enlarged EU may improve, due mainly to improved terms-of-trade for the Union; extension of the CAP to agricultural producers in the new member countries may cause a substantial increase in the CAP budget; further reforms in the CAP may lead to a welfare improvement for the European Union but they may not reduce substantially transfers to new member countries; the economy-wide impact for the United States may be positive and small; agricultural producers in the United States, however, may be hurt.

Introduction

On the spectrum of economic integration defined by economists, the European Union (EU) represents the most intensive integration among countries. Since its formation as the European Economic Community in 1957, its name has evolved as the degree of integration among member countries has steadily progressed. *Union* signifies the march toward ever-deepening political, economic, and social policy harmonization among member countries. The contemplated inclusion of many of the Central and Eastern European Countries (CEEC's), therefore, entails much more than the typical regional trade agreements (RTA's) discussed elsewhere in this report. In addition to eliminating trade barriers among its members, common to other RTA's, EU enlargement entails harmonization of trade barriers against third countries (indicative of customs unions) and, more important, the harmonization of domestic sectoral policies leading to common prices, a common budget to finance agricultural and other policies, and ultimately, a common currency.

Conventional comparative static economic analyses of RTA's focus on terms of trade and on resource allocation effects and whether there is trade creation or trade diversion, and hence, whether welfare improves or declines due to the RTA. Trade-creation and trade diversion do not refer to the volume of trade pre- and post-RTA formation. Trade-creating RTA's are presumed to increase the welfare of the importing country of the RTA, while trade-diverting RTA's are presumed to reduce the welfare of the importing

country. Theoretical models with few sectors and/or countries do not indicate whether an RTA will be welfare-enhancing for its participants, much less for the excluded countries. Whether an RTA is welfare-enhancing depends, in part, on the relative demand and supply elasticities of the importing country, the cost structure of member and competing third countries, and the tariff level before the formation of the RTA. The presumption, however, is that RTA's are more successful the nearer together member countries are, because transport costs would not dissipate the gains from trade. Also, successful RTA's are more likely among countries with similar levels of factor endowments and development. Both these criteria, especially physical proximity, bode well for EU expansion.

The level of development of the EU and the CEEC's, however, is quite dissimilar, so the expansion may lead to welfare losses if trade diversion dominates. For example, the 1993 GDP of the seven CEEC's (that is Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovak Republic, and Slovenia) was only 3 percent of the EU level, while their population was 26 percent, suggesting low factor productivity. But the CEEC's are land-abundant: their total agricultural land area is 38 percent of the agricultural land area in the EU. Their agricultural and food production technology is labor-intensive, utilizing more than 22 percent of their labor force compared with less than 6 percent in the EU. Agriculture is also a more important sector to the CEEC's, contributing 11 percent to their GDP, compared with 3 percent for the EU.

An additional complicating factor in a theoretical model-based determination of the welfare effects of EU enlargement is that it involves not just changes in border policies, but in domestic policies as well. Consequently, whether the EU's eastward enlargement will be welfare enhancing or not is a question that we must address with a numerical economic model as we do below.

One of the key building blocks of the EU has been its Common Agricultural Policy (CAP). The CAP is predicated on high domestic prices, protected by high

tariffs and other barriers against third countries, and facilitated by extensive use of export subsidies to reduce surplus production stimulated by the artificially high domestic prices. Member countries of the EU guarded their agricultural sectors while liberalizing their manufacturing sectors during multilateral negotiations in the GATT. This approach resulted in a highly protected and distorted agricultural sector, a sector where the CEEC's may have a comparative advantage and which employs a larger portion of its productive factors relative to the EU.

Current EU members must balance the financial costs of eastward enlargement (that is displacement costs to import-competing sectors and budgetary costs of carrying out agricultural and structural policies) with the political insurance of stable democratic neighbors to the east. The open-ended support provided to agricultural producers in the past resulted in budgetary problems which, along with pressures from third countries during the Uruguay Round, finally led the EU to reform the CAP in 1992. Potential EU expansion and additional budgetary costs have prompted the EU Commission to propose further CAP reforms in its *Agenda 2000*. One proposal is to further reduce support prices from the levels attained with the 1992 CAP reform.

The political impetus for accession is equal, if not stronger, in the CEEC's. The policy changes that the CEEC's have undergone as they shifted from centrally planned to market-driven economies have been extensive. Their economies declined substantially during the transition, as did those of their trading partners, forcing them to find alternative markets following the formation of the Newly Independent States and Baltics (NIS/B). The CEEC's must continue to undergo further changes to join the EU and these changes will have economywide implications. But these countries see both political and economic gains. Accession to the EU will anchor their continued drive to democracy, and even though they will be joining a highly distorted RTA and they may experience economic losses from nonoptimal allocation of resources, they view the potential financial transfers as important contributors

to infrastructure development and productivity gains. Plus, accession provides them with the potential for increased foreign direct investment and an easy entry into the markets of a large, rich neighbor.

As a prelude to accession and to help solidify the new democracies, the EU signed Association Agreements, commonly called Europe Agreements, between 1991 and 1995, with each of the potential CEEC entrants. The main purpose of these agreements is to promote closer economic and cultural cooperation.

The EU has announced the timetable for negotiations with the "fast track"[1] CEEC's. Although the CEEC's come to the table without a great deal of negotiating power, the anticipated high budget costs of EU enlargement have brought about pressures to further reform the CAP in conjunction with enlargement.

For third countries, including the United States, the concern about EU enlargement is not so much the potential of losing the CEEC markets because these countries are very small traders. For example, U.S. exports to the CEEC's in 1992 were less than 1 percent of total exports, as was the case for U.S. agricultural exports. Third-country concerns are with their potential exclusion from trade in the enlarged block, that is, CEEC's displacing their exports to the EU, and the potential displacement of their exports in third markets given the subsidies that the CAP provides to agriculture. The potential changes in trading patterns may also have terms-of-trade effects, which may reallocate resources among sectors in third countries. However, neither the United States nor other third countries have much scope to influence the outcome of the enlargement negotiations.

Here, we examine the economic implications of EU enlargement on current and new EU members; its implications for the CAP budget; the implications of EU enlargement coupled with CAP reforms; and the

implications of EU enlargement on the U.S. economy and the rest of the world. We find that: (1) economic welfare in the expanded EU of 22 countries may improve by about $1.5 billion, due mainly to improved terms of trade for the EU; (2) extension of the CAP to agricultural producers in the new member countries may cause a substantial increase in the CAP budget and a substantial net transfer (of about $16.1 billion) from the current EU members to the new EU members; (3) further reform in the CAP (e.g., 20-percent cut in agricultural producer subsidies) may lead to a substantial welfare improvement for the EU but may not reduce transfers to new member countries substantially; (4) the economywide impact for the United States may be positive, but small (up to $241 million); (5) agricultural producers in the United States may be hurt (e.g., relative returns to land decline), but consumers benefit from lower import prices; (6) the economywide impact for the sum of all other countries may be negative but small ($103 million); (7) the Asian and African economies, may be the only ones hurt by the EU expansion, due mainly to a negative terms-of-trade impact.

Economic Framework and Simulation Design

The implications of CEEC accession are assessed in the context of an economywide global trade framework that has 8 regions and 16 traded commodities.[2] We use the Global Trade Analysis Project (GTAP)

---

[1]Cyprus and five CEEC countries, Czech Republic, Estonia, Hungary, Poland, and Slovenia, are in this group.

[2]Our specification is: the United States; EU-12 (the 12 EU members prior to the 1995 expansion); EU-3 (Austria, Finland, and Sweden which joined the EU in 1995); CEEC-7 (Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovak Republic, and Slovenia); the Newly Independent States and Baltics (NIS/B); Middle East and Northern Africa (MEA); Countries of European Free Trade Area (EFTA); and the rest of the world (ROW). There are four primary agriculture sectors (wheat, other grains, nongrain crops, and livestock), and four processed foods sectors (meat products, dairy products, other processed food products, and beverages and tobacco). The rest of the economy is represented with eight sectors (forestry, pulp and paper; coal; oil; gas; petroleum and coal products; chemicals, rubbers, and plastics; other manufactures; and services).

model to assess the effects of CEEC accession to the EU. GTAP is a global trade applied general equilibrium framework, which is fully documented in Hertel (1997). We focus on the effects of accession on the United States, participating countries, and agriculture and food industries.

One of the most contentious issues regarding CEEC accession is its impact on the costs of the CAP. To consider this issue in our analysis, we modified the GTAP model by including a budget component. We determine the budget expenditures required to finance the CAP given our policy assumptions, and the tax rate needed to generate the necessary revenue to balance the budget. Even though most of the EU's budget revenue is derived from value-added tax, for computational ease we impose a tax on income. Our results do not depend on the method used to generate the revenue.

Our model is based on 1992 data. The GTAP data have information on tariffs and export subsidies established by the Uruguay Round Agreement (URA), and domestic support rates for 1992 (McDougall, 1997). For the EU, however, the URA commitments do not reflect the lower domestic prices resulting from the 1992 reform of the CAP. To reflect the impact of the CAP reform, we use recent border policies for agriculture in the EU and CEEC-7 (Hertel *et al*., 1997). Table 1 shows all supply and export subsidies and import tariffs in our data. These data suggest that the EU subsidizes agriculture more than the CEEC-7. For example, while the EU provided about 43 percent export subsidy to its wheat exporters, the CEEC-7 taxed wheat exports to the tune of about 17 percent. Support for nonagricultural sectors, however, is higher in the CEEC-7 than in the EU. For example, while the EU imposed tariffs of about 7.9 percent on manufactured goods, the CEEC's imposed a tariff of about 8.6 percent. Supply subsidies in the EU suggest that as a result of CEEC accession, producer prices in agriculture would increase more than those in manufactures. This change in relative prices contributes significantly to our results.

Our CEEC accession simulation consists of: (1) removing all trade barriers between the 7 CEEC

(CEEC-7) countries in our model and the 15 EU member countries (EU-15); (2) harmonizing CEEC-7 output subsidies and import protection, with respect to other countries, with that of the EU-15; and (3) participation of CEEC-7 in the EU budget. The CAP has some production-limiting policies such as land set aside for grains and oilseeds and a milk quota. We do not impose these policies on the acceding CEEC's because it is not clear that the set-aside program will be imposed on the new entrants, nor is it known what their quotas may be. Furthermore, our dairy sector includes processed products whose production is not constrained.

To assess the impacts of further CAP reform, we conduct a second simulation where CEEC accession is coupled with a 20-percent reduction in producer support for agricultural commodities in the EU (a frequently mentioned target).

Simulated Effects of CEEC Accession to the EU

Output and Resource Effects

Table 2 shows estimated impacts of CEEC accession on output supply in percentage change, as well as 1992 values of supply for selected regions. For third countries, including the United States, the largest impact of CEEC accession is on their agricultural sectors. In most cases, supply of agricultural commodities is reduced, but changes are less than 1 percent. Even in the EU-15, CEEC-7 accession has a minuscule effect on supplies, especially in nonagricultural sectors. Output changes the most in agricultural sectors, where supplies fall from 0.5 to 2 percent. But, for the CEEC-7, accession expands output, especially in the agricultural sectors. These results are not surprising, given the relatively large change in CEEC prices following accession.

An important result is the change in composition of output between agricultural and nonagricultural sectors within a country and the shifts in production between countries. EU enlargement leads to expansion of the

Table 1--Supply subsidies, import tariffs, and export subsidies in the model

	US	EU-12	EU-3	CEEC-7	NIS/B	EFTA	MEA	ROW
				Percent				
Supply subsidies								
Wheat	0.2462	0.0479	0.0479	0.0054	0.0013	-0.0191	-0.0038	0.0335
Other grains	0.2374	0.021	0.021	0.0019	-0.0119	-0.0249	-0.0033	0.0354
Nongrains	0.0395	0.5396	0.5396	0.0032	-0.0032	-0.0218	-0.0033	0.0567
Livestock	0.0269	0.0698	0.0698	0.0044	-0.0028	-0.0183	-0.0056	0.0049
Forestry, pulp, and paper	0	-0.0153	-0.0017	-0.0031	-0.0154	-0.0161	-0.0115	-0.0192
Meat	0	-0.0411	-0.0024	0.0516	-0.0023	-0.0087	-0.0052	0.0048
Milk	0.0327	-0.002	-0.0017	0.0012	0.1202	-0.0111	0.1995	0.0204
Other food products	0	0.0002	-0.003	0.0103	-0.0061	-0.0101	-0.01	-0.0109
Coal	0	-0.0097	0.0751	0.0036	0.0047	-0.0523	-0.0002	-0.0132
Oil	0	-0.1886	-0.0022	-0.1163	-0.0521	-0.0755	-0.0064	-0.0147
Gas	0	-0.1647	-0.0022	-0.2053	-0.0574	-0.0723	-0.0320	-0.0193
Beverages and tobacco	0	-0.3479	-0.0025	0.0048	-0.191	-0.4042	-0.2517	-0.3097
Chemicals, rubbers, and plastics	0	-0.0079	-0.0039	-0.004	-0.0352	-0.0722	-0.0062	-0.0516
Petroleum and coal products	0	0	-0.0004	-0.0152	-0.0382	-0.0543	-0.0401	-0.0574
Other manufactures	0	-0.0077	0.0017	0.0008	-0.0194	-0.0249	-0.0181	-0.0279
Services	0	-0.0233	0.0056	-0.0023	-0.0313	-0.0396	-0.0134	-0.0279
Import tariffs								
Wheat	0.04	0.43	0.43	0.3039	-0.0699	0.54	0.2198	0.4251
Other grains	0.0046	0.85	0.85	0.1696	0.02	0.6722	0.1691	1.0249
Nongrains	0.4765	0.5	0.5	0.1114	0.11	0.627	0.2358	0.2752
Livestock	0.017	1.53	1.53	0.2384	0	0.0081	0.2128	0.2243
Forestry, pulp, and paper	0.0118	0.0204	0.0199	0.0554	0	0.0097	0.2511	0.1007
Meat	0.04	1.53	1.53	0.2504	0.355	0.763	0.2828	1.1524
Milk	0.92	0.66	0.66	-0.2599	-0.02	1.0538	0.2527	0.5992
Other food products	0.0275	0.0772	0.076	0.1352	-0.0073	0.0529	0.2448	0.115
Coal	0	0.0053	0.0057	0.0202	0	0.005	0.17	0.0585
Oil	0.0051	0	0	0.0205	0	0.0087	6.8198	0.0509
Gas	0	0.0046	0.0024	0.0133	0	0.008	0	0.0598
Beverages and tobacco	0.0339	0.1638	0.1507	0.4271	0	0.0607	0.2898	0.3562
Chemicals, rubbers, and plastics	0.0787	0.1435	0.116	0.061	0	0.0118	0.2054	0.1098
Petroleum and coal products	0.0085	0.018	0.0207	0.0729	0	0.3182	0.2543	0.1206
Other manufactures	0.0995	0.0786	0.0767	0.0865	0	0.0265	0.2657	0.1383
Services	0	0	0	0	0	0	0	0.0001
Export subsidies								
Wheat	0.1283	0.43	0.43	-0.17	-0.0016	0	-0.002	0.0314
Other grains	0.0092	0.85	0.85	0.15	-0.0006	0	-0.0007	0.0207
Nongrains	0	0.1945	0.1945	0	-0.0186	0	-0.0027	-0.0307
Livestock	0	1.24	1.24	0.15	-0.0003	0	-0.0145	-0.0271
Forestry, pulp, and paper	0	0	0	0	-0.0284	0	-0.0065	-0.0242
Meat	0.01	1.24	1.24	0.15	0.0135	0	-0.0099	-0.0031
Milk	0.3311	0.66	0.66	-0.26	0.0568	0	-0.0131	0.0693
Other food products	0	0.0059	0.0059	0	-0.012	0	-0.0030	-0.0207
Coal	0	0	0	0	-0.4286	0	-0.0191	-0.0117
Oil	0	0	0	0	-0.4286	0	-0.0006	-0.0526
Gas	0	0	0	0	-0.4279	0	-0.0003	-0.0206
Beverages and tobacco	0	0	0	0	-0.1435	0	-0.0011	-0.0331
Chemicals, rubbers, and plastics	-0.0073	-0.0089	-0.0089	-0.0578	-0.0550	-0.0553	-0.0508	-0.0402
Petroleum and coal products	0	0	0	0	-0.4286	0	-0.0049	-0.0353
Other manufactures	-0.0003	0	0	-0.0104	-0.0746	-0.0049	-0.0029	-0.0573
Services	0	0	0	0	-0.0072	0	-0.006	-0.0101

Table 2--Supply impacts

Commodity	U.S.		EU-15		CEEC-7		NIS/B	ROW
	Mil. dol.	Percent	Mil. dol.	Percent	Mil. dol.	Percent	Percent	Percent
Wheat	14,949	-0.66	22,465	-0.56	2,014	20.30	-0.80	-0.18
Other grains	46,503	-0.88	24,591	-1.03	5,679	26.78	-0.65	-0.37
Nongrains	62,182	-0.90	186,808	-2.00	14,662	50.07	-2.41	-0.56
Livestock	98,485	-0.44	291,711	-2.06	6,271	42.48	-0.51	-0.73
Meat products	88,008	-0.34	235,128	-1.95	11,528	39.25	-0.60	-0.27
Dairy products	50,930	-0.44	122,707	-2.16	3,502	119.39	-0.89	-4.18
Other food products	225,246	-0.08	426,346	0.17	23,417	-3.06	0.19	-0.04
Manufactures	1,714,420	0.00	2,546,733	0.74	95,986	-20.69	0.05	0.10

nonagricultural sectors in third countries, but the effects are inconsequential. Following CEEC accession, nonagricultural output in the EU-15 expands, albeit moderately. The change in the composition of output in the CEEC-7, however, is more dramatic. In contrast to other countries, nonagricultural production declines. At post-accession relative prices, the CEEC-7 become more specialized in agricultural production and produce more of the world's supply, while more of the nonagricultural products are provided by other regions.

Sectoral allocation of resources does not change very much in the nonparticipating countries. In the United States, CEEC-7 accession leads to a slight shift in resources out of agricultural sectors. In the EU-15, resources flow out of agriculture as demand for these factors declines. In the CEEC-7, the large expansion in agricultural output attracts resources, which are withdrawn from other sectors in the economy. Relative returns to land, an indicator of how the agricultural sector is affected, decline in the United States and the EU by 1.75 and 3.66 percent, respectively.

Trade Effects

CEEC accession has very little effect on total trade despite the fact that CEEC-7 imports expand by 30 percent. This relatively large expansion has almost no impact on total world trade (the volume and value of total global trade increases less than 1 percent), because the CEEC-7 countries account for a very small share of world trade.

Following CEEC accession, third-country agricultural exports decline, while nonagricultural exports are hardly affected. For the United States and ROW, the fall in agricultural exports, except for dairy products, is small, but for the NIS/B, the fall in agricultural exports is more substantial (table 3). These results suggest that the already shifting trade patterns between the NIS/B and CEEC's (following the transition period) will continue after accession.

The specialization in production that occurs in EU-15 and CEEC-7 is manifested in their exports. As a result of CEEC accession, the CEEC-7 become more

Table 3--Trade impacts on exports

Commodity	U.S.	EU-12	EU-3	CEEC-7	NIS/B	ROW
			Percent			
Wheat	-1.01	7.71	-8.70	124.94	-2.12	-0.58
Other grains	-3.06	-5.68	4.71	177.44	-13.70	-2.26
Nongrains	-3.34	-5.58	5.72	384.88	-12.90	-4.05
Livestock	-4.34	-5.30	-12.34	663.95	-12.40	-3.45
Meat products	-2.13	-5.82	29.32	666.86	-9.22	-3.48
Dairy products	-22.50	-15.44	-11.26	2,237.89	-9.68	-21.90
Other food products	-0.48	8.72	11.37	-28.17	0.72	0.59
Manufactures	0.05	2.85	2.37	-15.18	0.18	0.21

specialized in agricultural production and their exports of these products expand; the EU-15 become more specialized in manufactures and they expand their exports of those products (table 3).

EU enlargement is trade-diverting in agricultural products as EU-15 imports from third countries are displaced by imports from CEEC-7 (table 4). U.S. agricultural exports to EU-15 decline as a result of accession, with the largest declines occurring in livestock and livestock products—the sectors with the largest increases in output in CEEC-7. Similarly, exports to EU-15 from other third countries also decline, and CEEC-7 exports (except other food products) to EU-15 expand. EU-15 imports of other food products and nonagricultural goods from third countries are little affected, but imports of these commodities from CEEC-7 fall substantially, reflecting the fact that output of these sectors declines in CEEC-7.

Following accession, U.S. and other third-country agricultural exports to the CEEC-7 decline significantly, with the exception of wheat (table 5). The fall in demand for agricultural imports from third countries is not surprising given the large increases in CEEC-7 output. Import demand for wheat in CEEC-7 expands mostly to satisfy feed demand of the expanded livestock, meat, and dairy sectors. Increased demand for other food products is also satisfied by increased imports from all regions, including the United States. In contrast, expanded demand for manufactures is satisfied by increasing imports from the United States and EU-15 at the expense of NIS/B and ROW. In other

Table 4--EU-15 imports from various countries of origin

Commodity	U.S.	CEEC-7	ROW
		Percent	
Wheat	-1.88	188.52	-1.28
Other grains	-6.68	35.13	-3.22
Nongrains	-8.11	532.04	-7.65
Livestock	-17.36	1,049.53	-35.13
Meat products	-34.87	809.58	-34.37
Dairy products	-9.96	1,229.76	-8.38
Other food products	-0.48	-24.54	0.18
Manufactures	0.24	-12.16	0.55

Table 5--CEEC-7 imports from various countries of origin

Commodity	U.S.	EU-15	NIS/B	ROW
		Percent		
Wheat	74.79	94.00	173.34	75.72
Other grains	-15.39	15.74	-14.83	-14.77
Nongrains	-60.80	22.80	-60.26	-60.43
Livestock	-80.46	-36.53	-80.31	-80.27
Meat products	-81.88	-53.32	-81.83	-81.77
Dairy products	-76.37	-63.12	-76.34	-75.88
Other food products	8.73	117.14	29.54	31.82
Manufactures	32.36	47.13	-0.56	-8.12

grains and nongrains, EU-15 exports to CEEC-7 expand while exports from third countries contract.

The expanded EU is also a competitor to the United States in the agricultural markets of third countries. U.S. agricultural exports to these countries decline while those from the EU expand. Even in the U.S. import market, EU exports displace those from other countries. U.S. imports of agricultural commodities, from all regions, increase by less than 0.5 percent, except for other grains, meat, and dairy products, which increase by 2, 4, and 5 percent as world prices of these products fall due to expanded subsidized EU exports.

The net effect of CEEC accession on trade is that all regions, except CEEC-7, have an increase in their trade balance, that is, the value of exports increases more than the value of imports. For the United States, the trade balance increases by $193 million (1992 dollars), for the ROW it increases by $209 million, while the other regions enjoy small increases in their trade balance. The largest impact is on the trade balance of the EU-15 and the CEEC-7. The EU-15 enjoy an increase of $14.7 billion, while the increase in import demand for nonagricultural products leads to a decline of $15.2 billion for the CEEC-7.

The overall terms of trade for the United States improve negligibly as the prices of imported commodities fall more than the prices of exports. The terms of trade of the CEEC-7 improve dramatically as they are now exporting under higher prices to the EU-15. The terms of trade of the EU-15 decline slightly as the prices of their imports increase.

Income, Expenditures, EU budget, and Welfare

CEEC-7 accession to the EU results in a substantial (21-percent) increase in the region's household income; household income in EU-15 and the other regions does not change. Consequently, household demand in the CEEC-7 expands substantially, especially in manufactured goods.

The bulk of EU's budget is devoted to supporting the CAP through the European Agricultural Guidance and Guarantee Fund (EAGGF) and to providing transfers to disadvantaged member states or regions through the Structural and Cohesion Funds. Our estimate of EU budget costs focuses on the EAGGF component but does not include compensatory payments from the recent CAP reform. However, many argue that compensatory payments should not be granted to CEEC farmers, so excluding these payments may not do serious damage to estimates of costs. However, payments from the Structural and Cohesion Funds, which could be substantial, are also not included. Allocation of these funds will more than likely be a political decision (Baldwin *et al.*, 1997), which is outside the scope of our analysis. In this regard, we underestimate expenditures. But our budget includes expenditures on export subsidies as well as subsidies on domestic production. In this regard, we may be overestimating budget costs because EU-15 subsidies for CEEC-7 domestic production may be excluded in the accession agreement. Hence, it is not clear whether we overestimate or underestimate budget exposure due to accession.

Table 6, part A, summarizes the welfare impacts of CEEC-7 accession to the EU. Budgetary costs seem a legitimate cause for concern, as CEEC-7 accession leads to a net transfer of $16.1 billion (1992 dollars) from the EU-15 to CEEC-7, 35 percent of the EU's agricultural budget for that year. The CEEC-7 contribute $3.2 billion to the EU budget, but they receive $4.2 billion to subsidize their exports and $15.1 billion to subsidize their domestic producers. Our results are similar to those generated by Baldwin and others.

The welfare impact of CEEC accession is positive for the world as a whole, the CEEC-7, and the United States; there are welfare losses, however, in the EU-15 and the sum of remaining regions. World welfare, measured by equivalent variation, increases by $1.6 billion. The United States gains $241 million; other third countries combined lose about $103 million. In the United States, lower production and export levels for subsidized agricultural and food commodities lead to efficiency gains, which account for the majority of U.S. welfare gains; there is a positive terms-of-trade impact, but it is very small. We expect, however, that the efficiency gains from lower agricultural production and exports would be actually smaller because of agricultural policy reforms in 1996. The net welfare impact for the United States would still be positive though. We confirmed this hypothesis using a simulation without supply and export subsidies in the United States.

The largest beneficiary of accession is the CEEC-7, with a welfare gain of $17.7 billion, most of which is due to the income transfer from the EU-15. The residual welfare impact, a gain of $1.5 billion, may be decomposed to: (1) substantial efficiency losses from resources moving into the highly subsidized food and agriculture sectors, and (2) a substantial improvement in its terms of trade, which dominates efficiency losses.

The EU-15 lose $16.1 billion in welfare, most of which is due to the income transfer to the CEEC-7. The residual welfare impact, a loss of $76 million, may be decomposed to: (1) substantial efficiency gains from resources shifting out of the highly subsidized agricultural sector to the less subsidized nonagricultural sector, and (2) a substantial deterioration in the terms of trade of the EU-15, which dominates efficiency gains.

Economic welfare declines by $103 million in all other regions combined. It is, however, the Asian and African economies that are hurt by the EU expansion, due mainly to a negative terms-of-trade impact.

A welfare improvement for the world as a whole from CEEC-7 accession is mainly due to the agricultural

Table 6--Welfare impacts of CEEC-7 accession

	U.S.	EU-15	CEEC-7	All other regions	Global impact
			Million dollars		
A. Base					
Impact					
Of transfer	0.0	-16,140.8	16,140.8	0.0	0.0
Of policy changes	240.9	-75.7	1,540.1	-103.3	1,602.0
Total welfare	240.9	-16,216.5	17,680.9	-103.3	1,602.0
B. Under reformed CAP					
Impact					
Of transfer	0.0	-14,283.8	14,283.8	0.0	0.0
Of policy changes	295.8	4,265.5	1,873.3	339.3	6,773.9
Total welfare	295.8	-10,018.3	16,157.1	339.3	6,773.9

policies in regions other than the EU and the CEEC-7. Policies are assumed to be those in place in 1992. The sum of efficiency gains from lower agricultural production and exports in all other regions is larger than the efficiency losses in CEEC-7 from higher agricultural production and exports. If we considered agricultural policy reforms that have taken place in several countries since 1992, we would expect the welfare impact for the world as a whole to be smaller, but still positive.

The results presented above regarding changes in production and trade do not materially change following further CAP reform (i.e., reduction of producer support by 20 percent). But, further CAP reform substantially improves global welfare (table 6, part B).

Lower prices imposed under this scenario lower CAP budget costs. Net transfers to the CEEC-7 from the EU-15 with this scenario are $14.3 billion, almost $2 billion less than in the previous scenario. In addition, lower EU prices lead to higher global welfare, up $6.8 billion compared with $1.6 billion without CAP reform.

In the United States, the new price scheme leads to larger welfare gains. As in the previous simulation, efficiency gains, though smaller, result from lower agricultural production and exports. However, improvement in the U.S. terms of trade is substantially larger than in the previous simulation, and this leads to a larger welfare improvement.

The welfare loss of the EU-15 is $6 billion less than in the previous simulation. Not only is the income transfer to the CEEC-7 lower, but the residual welfare impact is now positive. There are substantial efficiency gains in the EU-15 due to lower agricultural and food support, but these efficiency gains are eroded by a deterioration in its terms of trade.

Even though the CEEC-7 accede to an EU with lower agricultural support, their welfare gains are reduced only $1.5 billion from the previous simulation. The residual welfare impact is greater than in the previous simulation because, as expected, efficiency losses under reduced agricultural support are smaller.

Global welfare improves substantially from CEEC-7 accession under a reformed CAP because agricultural supports are reduced in the EU-15 itself. Relative to the earlier simulation, in this simulation, larger efficiency gains in EU-15 dominate smaller efficiency losses in CEEC-7 and smaller efficiency gains in all other regions.

Conclusions

Our results suggest that the EU enlargement will be welfare-enhancing for third countries. For the United States, enlargement means that agricultural exports to the CEEC's and EU-15 fall modestly, while nonagricultural exports expand. U.S. agricultural exports to third countries also decline as exports from the

enlarged EU expand, but the overall trade balance for the United States is positive, and there are small welfare gains. U.S. welfare gains are even larger with further CAP reform.

Our results indicate that CEEC accession is trade-diverting in agricultural products. Upon accession, CEEC's will have a comparative advantage in the agricultural sectors while nonagricultural sectors will contract. Furthermore, EU enlargement will impose substantial costs to the EU agricultural budget. In terms of resource allocation and supply changes, as expected, we found that all of the adjustment is in the CEEC-7: its agriculture expands and manufactures shrink. Accession has a small effect on total trade of the EU-15 and the CEEC-7.

Global welfare increases $1.6 billion with EU enlargement, $6.8 billion with further reform of the CAP. In this case, efficiency gains from CAP reform in the EU-15 and reduced transfers to the CEEC lead to smaller welfare losses for the EU-15, while total welfare for the CEEC's is only $1.5 billion less than in the base scenario.

The results presented are conditional on the modeling framework and the base year. During 1992, the economies of the CEEC's were in transition-induced decline. The percentage changes in output may be less dramatic given a more recent base year. Similarly, we assumed that the agricultural sectors of the CEEC's

were not constrained by output-reducing policies such as land set-aside or quotas. If these policies are imposed on the new entrants, output effects will be mitigated. However, our results are similar to those in other studies, suggesting that the limitations are not serious.

References

Baldwin, Richard E., Joseph F. Francois, and Richard Portes. "EU enlargement: Small costs for the west, big gains for the east," *Economic Policy*, April. pp. 126-176, 1997.

European Commission. "Agenda 2000: For a stronger and wider Europe," Strasbourg/Brussels, Press release IP/97/660, 16 July, 1997.

Hertel, T. W., editor. *Global Trade Analysis: Modeling and Applications.* Cambridge University Press, 1997.

Hertel, T. W., M. Brockmeier, and P. Swaminathan. "Sectoral and Economywide Analysis of Integrating Central and East European (CEE) Countries into the European Union (EU): Implications of Alternative Strategies," *European Review of Agricultural Economics*, Vol. 24, No. 3/4, 1997.

McDougall, R.A., editor. *Global Trade, Assistance, and Protection: The GTAP 3 Data Base* Center for Global Trade Analysis, Purdue University, 1997.