

## **EU Enlargement - A New Dimension**

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## **EU Enlargement - A New Dimension**

Abstract:

Enlarging the EU presents a tremendous effort with obstacles for old and new member states especially in the agricultural sector. In this paper, impacts of a new accession round were analyzed with the help of the comparative-static general equilibrium model GTAP (Global Trade Analysis Project). The standard version was extended to allow for a better representation of specific instruments of the Common Agriculture Policy and the EU budget. To capture detailed effects in new member states, simulations were carried out for 12 candidate countries, the EU-15 and the rest of the world. As for products the focus lies on agriculture. Scenarios include an enlargement with and without the transfer of direct payments in the new member states, according to the proposal of the EU commission from January 2002. Simulations in a post-Agenda 2000 environment led to heterogeneous country specific impacts in the accession countries whereas the changes within EU-15 and the rest of the world were negligible. Due to adjustments in tariffs, trade balances of the new member states were deteriorating while welfare effects are positive. Transfer of direct payments led to more pronounced effects, especially with regard to output and trade. Without direct payments accession countries would be net contributors to the EU budget. This would change when they become eligible for this subsidy. In general, the analysis shows the importance of a country specific perspective.

Keywords: EU enlargement, Common Agricultural Policy, EU budget, GE-modeling

JEL: D58, E62, F15, O52, Q18

### **1 INTRODUCTION**

On 9<sup>th</sup> October 2002, the European Commission recommended to close negotiations with 10 candidate countries (EU, 2002a). Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic and Slovenia are now scheduled to join the

European Union (EU) in 2004. This proposal only leaves Bulgaria and Romania<sup>1</sup> out of the next enlargement round and forms another milestone in the lengthy process of negotiations.

During the ongoing as well as former EU enlargement rounds agriculture and the Common Agricultural Policy (CAP) have always been at the heart of controversial debates. At the end of January 2002, the European Commission therefore issued a paper that was to serve as the basis for a common position on the agricultural sector (Commission of the European Communities, 2002). Here, the issue of direct payments and their transfer to farmers in new member states is of particular importance.<sup>2</sup> Suggestions contained in the January document are seen as too expensive by current EU member states, while accession countries criticize them as inadequate. However, the commission clearly stated that any changes of the proposal that would lead to an expansion of the EU budget can hardly be expected.

Right from the start, the debate on the next EU accessions has been accompanied by quantitative research exploring possible effects. The amount of literature has grown and now includes a variety of analyses using partial equilibrium models (e.g. Münch, 2000; Frohberg & Hartmann, 2001) as well as general equilibrium models (e.g. Hertel et al., 1997; Nielsen, 1999; Banse, 2000 and Frandsen & Jensen, 2002). However, economy-wide, country specific analyses including the EU-15 and all accession regions are not available yet. Since the candidate countries differ widely not only in cultural and geographical but also in economic terms, research allowing for the examination of regional characteristics becomes more relevant.

Consequently, the goal of this paper is to determine region specific effects of an EU enlargement in an overall economic context. Due to its key role in the negotiations and the large financial support provided by the EU, agriculture forms the focus of the study. The

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<sup>1</sup> Turkey is an applicant country but negotiations have not yet started.

<sup>2</sup> Direct payments were introduced in the CAP as a part of MacSharry reform in 1992. They were aimed to partly compensate EU farmers for implemented price cuts. Within the enlargement negotiations it is debated if

analysis particularly considers the transfer of market support systems to accession countries and the new proposal of the Commission related to direct payments. Furthermore, it aims to evaluate interactions between agriculture and other sectors as well as worldwide effects.

## 2 METHODOLOGY

### *Model: Standard version and extensions*

EU enlargement affects the entire economy of various countries, which makes a model able to assess economy-wide effects in an international context necessary. Here, we used the well-known worldwide, comparative-static, general equilibrium GTAP model. Due to the comprehensive existing documentation of the standard model framework (Hertel, 1997; <http://www.agecon.purdue.edu/gtap>), a detailed presentation of the standard model is not included in this paper. However, some extensions of the standard methodology have been implemented. They allow for a better analysis of two topics crucial within the accession debate, namely agriculture and the financing of the enlargement. We have put special emphasis on the modeling of quotas, direct payments and set-aside regulations used in the agricultural sector and equipped the model with a budget module that enables us to calculate some fiscal effects of the accession process. These extensions are extensively explained in Brockmeier (forthcoming). However, due to the importance for this paper the budget module will be described briefly in the following.

The EU budget is introduced in the GTAP model using an innovative Social Accounting Matrix (SAM). This SAM not only covers the expenditures and revenues of already existing agents (e.g. producers, government, private household, etc.), but also of the European Agricultural Guidance and Guarantee Fund (EAGGF). As formulated in EU law (EU, 2002b), the EU budget receives 90 percent of the import duties for agricultural and non-agricultural

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farmers in acceding countries are eligible for compensation since they have not experienced these institutional price reductions.

products from producers, the private household, the government and the capital account. Additional revenues result from an endogenously calculated GDP related tax which flows from the regional household to the EU budget.<sup>3</sup> Here, all EU member countries face an equal GDP tax rate. Revenues of the EU budget are used to cover agricultural output and export subsidies as well as direct payments. In contrast to these product specific instruments, expenditures for structural policies are not covered within the EU budget module. Due to their characteristics and specific aims, structural funds can not be allocated to certain commodities. This strongly hampers their implementation into a product specific model like GTAP.

Obviously, revenues of the EU budget from one member country are not identical with the expenditures the EU budget is spending on the same member country. A comparison of revenues and expenditures of each member state therefore shows the net transfer that takes place within the EU financial system. Analogous to capital transfer, the net transfer within the EU is part of the current account balance which makes up the difference between exports and imports of goods and services. However, the sum of net transfers of all member countries equals zero, since the EU budget is balanced via the endogenous GDP tax rate.

In the standard GTAP model EAGGF revenues and expenditures are organized through the regional household. All components of the EU budget are therefore introduced with the help of dummy variables allowing an easy shift from regional household to EU budget and vice versa. Consequently, a preliminary simulation is employed to move the GTAP data base from the initial situation without an EU budget to an equilibrium where the EU budget is in charge of the EAGGF. This mechanism is also used when new member countries need to be included into the EU budget. Furthermore, it allows for analyzing policy options like co-financing the CAP by EU member states which is frequently discussed in the current debate.

#### *Data*

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<sup>3</sup> The EU budget also includes a value-added tax, which is neglected in this analysis.

Until recently, simulations of an EU enlargement with the GTAP model were hindered by the given regional aggregation. Central and Eastern European countries were subsumed in larger regions, the Baltic states were part of the Former Soviet Union region and smaller candidates like Malta and Cyprus only appeared in the large “Rest of the World” aggregate. The newest GTAP version, with 1997 as base year, now contains 76 countries and 57 sectors including a variety of countries currently seeking entrance into the EU.<sup>4</sup>

**Table 1: Selected Aggregation**

<b>Regions</b>	Bulgaria (BL), Cyprus (CY), Czech Republic (CZ), Estonia (ES), Hungary (HU), Latvia (LT), Lithuania (LI), Malta (ML), Poland (PL), Romania (RO), Slovakia (SK), Slovenia (SV), European Union (EU), Rest of the World (ROW)
<b>Products</b>	CEREALS, OILSEEDS, SUGARPLANTS, OTHCROPS (other crops), CATTLE, RAWMILK, OTHANIMAL (other animal products), PROCESSAG (meat products, vegetable oils and fats, processed rice), OTHFOOD (other food products), SUGAR, CATTLEMEAT, DAIRY, OTHPRIMARY (other primary, 7 sectors) MNFCS (manufactures, 16 sectors), SVCES (Services, 15 sectors)

Further disaggregation of Central and Eastern European regions, as well as the inclusion of other accession candidates such as Malta and Cyprus, now allows for a country specific analysis and helps to detect specific developments in a general equilibrium framework. For our simulations we chose an aggregation that uses this new data (see Table 1) and allows us to analyze national characteristics. As for sectors, the focus lies on agriculture.

### *Simulations*

Modeling starts with some preparatory steps necessary to explicitly implement specific CAP instruments (Table 2). Generally, policy instruments are implemented in the standard GTAP model via price wedges using PSE (producer subsidy equivalent) information. Milk and sugar quotas are added, and resulting rents are shifted to producers. Due to the use of the budget module the direct payments, which are included in the GTAP model as derived numbers, are subject to minor adjustments to match the exact figures resulting from the Commission of the European Communities (1998). Preparatory experiments also simulate the impacts of policy

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<sup>4</sup> The database used in this paper is a release candidate for GTAP version 5.2, an extended version of GTAP 5

decisions prior to accession. Pertaining to the EU-15 this is particularly relevant for the implementation of the Agenda 2000.

**Table 2: Description of Scenarios**

<b>Preparatory simulations</b>	
Implementation of EU budget module within EU-15, introduction of quota regime for sugar and milk	
Transfer of quota rents from regional household to producer	
Update direct payments	
Agenda 2000	
<b>Final scenarios</b>	
EU Enlargement in 2006: Implementation of budget module within EU-27, adjustment of tariffs and subsidies within the new EU-27, implementation of common trade system and...	
no direct payments (NoDiPay)	uniform premiums on agricultural land (DiPay)

Recent developments related to the Mid-term Review of the Agenda 2000 indicate that some changes in the general concept of this reform package may be expected. However, since the debate is still going on we simulate the initial Agenda 2000 according to the agreement reached at the European Council in Berlin.<sup>5</sup> The database generated by preparatory simulations serves as a new database for further simulations. Preliminary results are not presented here.

Although Romania and Bulgaria presumably will not participate in the next enlargement round we simulated the accession of all countries currently involved in the negotiation process. The enlargement is simulated as an adjustment of protection levels in non-agricultural sectors and a complete transfer of all CAP instruments except direct payments. Concerning this instrument we differentiate between two scenarios. In the first we assume that direct payments are not transferred at all (NoDiPay), whereas in the second option farmers in accession countries will receive 35% of direct payments paid to farmers in the EU-15

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and currently only available for members of the GTAP consortium. It will become public in the near future.

<sup>5</sup> Agenda 2000 is modelled as follows: Direct payments on cereals, oilseeds, milk and beef were adjusted to fit the Agenda 2000. Reductions in intervention prices for cereals, dairy products and beef were simulated by a reduction in border protection, and the milk quota was expanded by 2.4 per cent. Set-aside regulations were implemented using the assumption that the data of GTAP version 5 implies a set-aside rate of 15 per cent which is lowered by the Agenda 2000. Consequently, the efficiency of land use in the crop sector improves.

(DiPay). The second scenario is based on the EU Commission paper published in January 2002 where two variations of direct payments are illustrated:

In the first approach, currently used within the EU-15, direct payments are calculated and paid according to commodity specific premium rights. These premium rights can be based on animal heads (e.g. suckler cows), production quotas (e.g. milk) or land areas (e.g. cereals). In the second option, applicable during a transition period, the total amount of direct payments is calculated in the same way. Distribution of payments to farmers, however, is simplified by introducing a uniform payment based on total agricultural area.

**Table 3: Proposed Premium Rights and Potential Direct Payments in 2006**

	Arable crops	Cattle	Calves	Extensification	Suckler cows	Sheep/goats	Raw Milk
Proposed premium rights							
Cyprus	54098	9030		4520	90	436846	131019
Czech Republic	2221844	424911	179733	231595	90113	56715	2505553
Bulgaria							
Estonia	387233	80500	73700	35580	637	27501	562633
Hungary	3553200	202199	104713	143000	133200	1026910	1946333
Latvia	484700	124320	53280	70200	2021	18437	489474
Lithuania	1336233	367484	244200	150000	10043	17304	1459000
Malta							45392
Poland	9207667	2034309	1200625	857700	453314	364000	8875000
Romania							
Slovakia	1011627	204062	62841	78348	39708	218360	946150
Slovenia	94192	125107	53617	77921	49067	52355	463333
Total	18350794	3571922	1972709	1648864	778193	2218428	17423887
Potential direct payments (€)							
Cyprus	2242578	252840	0	332220	6300	3210818	526893
Czech Republic	204785140	11897508	3145327	17022232	6307910	416855	10076081
Bulgaria							
Estonia	15113123	2254000	1289750	2615130	44590	202132	2262629
Latvia	21695899	3480960	932400	5159700	141470	135512	1968420
Lithuania	66883138	10289552	4273500	11025000	703010	127184	5867368
Malta							
Hungary	333762736	5661572	1832477	10510500	9324000	7547788	7827178
Poland	600966010	59960652	21010937	63040950	31731980	2675400	35690812
Romania							
Slovakia	92794521	5713736	1099717	5758578	2779560	1604946	3804942
Slovenia	11028517	3502996	938297	5727193	3434690	384809	1863294
Total	1349271662	103013816	34522405	121191503	54473510	16305444	69887617

Source: Commission of the European Communities (2002). - EastEurope (2002)



In our scenario DiPay all candidate countries follow the second approach and distribute their direct payments as a uniform premium attached to land. Since the paper of the EU Commission did not provide estimates of direct payments per country and sector, non-official estimates have to be used. Premium allotments presented in table 3 were summed up over each country, and an average acreage payment for every new member state was calculated (not shown). In the following, subsidies in arable crop sectors are derived by multiplying the average payment with the relevant area, while payments in the animal sectors are allocated according to the available grassland (Table 4). Additionally, it is assumed that only cattle and raw milk will be eligible for these subsidies. The distribution of payments between these two sectors is based on stock data on milk cows and other cattle.

For the two candidate countries Romania and Bulgaria an average acreage premium based on figures for all other candidate countries is assumed. The allocation across sectors follows the same approach as in the other accession countries. Since no information about direct payment is available for Malta, we draw on assumptions. However, pre-simulations have shown that results for extremely small countries such as Malta are extraordinarily sensitive. Therefore we decided to exclude Malta from direct payments until more exact information can be obtained.

**Table 4: Allocation of Subsidies by Sector Based on a Uniform Acreage Payment**

	Ag. Area	Cereals	Oilseeds	Sugarbeets	Other Crops	Raw milk	Cattle
	1000 ha						
						Mill €	
Cyprus	61	5	1	0	1	0	0
Czech	4280	102	16	6	7	42	85
Bulgaria	6203	70	17	0	3	82	41
Estonia	1434	6	0	0	1	9	9
Hungary	6195	181	34	6	8	64	87
Latvia	2508	7	0	0	1	15	12
Lithuania	3502	34	1	1	5	35	26
Malta	10	0	0	0	0	0	0
Poland	18457	399	15	19	63	158	173
Romania	14798	279	39	6	14	143	177
Slovakia	2445	40	7	2	3	22	41
Slovenia	495	5	0	0	1	8	13
Total	60388	1127	129	40	106	579	664

Source: Commission of the European Communities (2002). - EastEurope (2002). - FAOSTAT.

Output of milk and sugar in the accession countries differs only slightly from the proposed quotas. Due to the additional uncertainty which exists with regard to the distribution of quotas to Bulgaria and Romania, it is assumed that quotas are fixed at the current production level.

### **3 RESULTS AND DISCUSSION**

Production effects resulting from an EU enlargement can be summarized in three main observations: Firstly, results for new member states are very heterogeneous, not only varying in numbers but also in the general direction. This is mainly driven by the initial differences in protection. Secondly, production effects for old EU members are of minor importance. Thirdly, differences between scenario NoDiPay and DiPay with one exception (cereals in Cyprus) lie in the range of 0-7%. The implementation of direct payments only in some cases leads to an opposite reaction. Nevertheless, the introduction of this instrument into new member states most often pulls resources out of manufactures and services into agriculture.

Crop production in accession countries mainly show negative production effects, except for Cyprus and Malta and, in the cereals sector, Bulgaria, Hungary, Estonia and Slovakia. In the animal sector different reactions can be observed. Raw milk production is restricted by the quota regime, production in the cattle sector mainly grows, and other animal products decrease in the majority of regions. Reactions in the food sectors more or less reflect the developments in the primary agricultural sector.

With only one exception, Romania, sugar, dairy and cattle meat production show a growth while other food products decline. Outside the agricultural and food sector, services and other primary industries experience a reduction in output; in contrast to that manufactures expand.

**Table 5: Changes in Output in NoDiPay (s1) and DiPay (s2) (in %)<sup>6</sup>**

Product		BL	CY	CZ	ES	HU	LT	LI	ML	PL	RO	SK	SV	EU	ROW
CEREALS	<b>s1</b>	1.2	61.5	-1.4	6.6	9.1	-8.9	-12.8	189.7	-7.4	-5.3	3.6	-17.0	0.4	0
	<b>s2</b>	0.7	78.1	-0.2	6.0	11.0	-10.5	-12.4	189.6	-6.0	-5.7	2.9	-17.4	0.3	0
OILSEEDS	<b>s1</b>	-1.1	8.8	-5.6	-7.9	-3.0	-7.4	-10.6	13.8	-10.8	-8.3	-5.6	-2.0	0.2	0.1
	<b>s2</b>	-0.9	10.3	-3.6	-9.2	2.9	-9.0	-11.3	13.6	-11.3	-3.0	-5.7	-2.0	0.1	0.1
SUGPLANTS	<b>s1</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.3
	<b>s2</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.3
OTHCROPS	<b>s1</b>	0.6	30.8	-4.7	-7.3	-7.1	-4.5	-6.7	-10.1	-7.2	-8.6	-4.0	-22.1	0.7	0
	<b>s2</b>	-0.7	28.6	-6.0	-8.9	-12.1	-9.6	-10.3	-10.0	-10.8	-11.4	-6.3	-21.6	0.9	0
CATTLE	<b>s1</b>	-0.2	8.6	-0.1	-0.3	12.1	6.1	0.3	2.2	21.0	2.8	1.4	0.4	-1.7	-0.1
	<b>s2</b>	0.8	8.5	3.7	1.1	17.9	9.6	1.8	1.8	25.6	8.3	5.6	0.9	-2.1	-0.1
RAWMILK	<b>s1</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.2
	<b>s2</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.2
OTHANIMAL	<b>s1</b>	0.8	8.3	0.1	-8.4	4.0	-2.8	-6.3	-6.8	-10.1	-3.0	-0.8	-5.6	0.6	0.1
	<b>s2</b>	0.1	8.1	-0.7	-8.8	-2.5	-7.4	-8.4	-6.7	-11.0	-3.7	-2.2	-7.1	0.8	0.1
OTHFOOD	<b>s1</b>	2.5	-2.4	-4.6	-8.3	-6.7	-10	-25.1	-17.2	-7.3	-34.4	1.2	-18.8	0.8	0
	<b>s2</b>	2.0	-2.0	-3.7	-7.8	-7.3	-10.8	-25.7	-17.2	-7.1	-34.4	1.3	-18.7	0.8	0
PROCESSAG	<b>s1</b>	6.7	5.9	1.5	0.4	20.9	-9.5	-12.8	34.2	-10.5	-26.2	-1.0	-15.8	0.2	0.1
	<b>s2</b>	5.9	6.1	1.4	0.7	14	-10.2	-13.3	34.3	-11.2	-26.7	-1.4	-15.5	0.3	0.1
SUGAR	<b>s1</b>	34.0	10.3	12.6	65.3	10.7	59.8	-3.2	179.4	2.3	-33.3	4.4	-6.4	-0.2	-0.7
	<b>s2</b>	31.5	10.3	13.2	65.0	11.8	60.1	-3.4	179.7	2.2	-33.6	4.4	-6.3	-0.1	-0.6
CATTLEMEAT	<b>s1</b>	18.8	21.7	-1.9	5.4	51.9	0.5	1.2	70.9	16.8	-9.4	1.9	41.8	-0.8	-0.1
	<b>s2</b>	17.3	21.6	-1.6	6.0	57.7	0.6	0.9	70.6	17.7	-9.2	2.2	41.7	-0.8	-0.1
DAIRY	<b>s1</b>	10.5	15.6	1.9	23.4	16.2	56.2	44.5	115.5	2.1	-11.5	3.2	1.1	-0.1	-0.3
	<b>s2</b>	10.2	15.5	2.1	23.0	16.6	56.4	43.0	115.6	1.0	-11.7	2.9	1.0	-0.1	-0.3
OTHPRIMARY	<b>s1</b>	-2.1	-2.7	-2.6	-1.5	-4.7	-0.7	-4.4	-1.1	-1.1	-3.8	-8.9	-0.1	-0.1	0.1
	<b>s2</b>	-4.0	-2.7	-2.8	-1.7	-5.3	-1.4	-5.6	-1.1	-1.5	-5.7	-9.4	-0.1	0	0.1
MNFC5	<b>s1</b>	-0.3	-3.9	7.7	5.1	5.0	12.2	1.8	26.7	2.2	4.6	3.7	5.4	-0.1	0
	<b>s2</b>	-1.7	-3.9	7.0	4.7	3.6	10.9	-0.6	26.8	0.9	0.8	3.2	5.3	0	0
SVCES	<b>s1</b>	-1.9	-0.4	-3.0	-2.8	-1.7	-3.4	1.5	-10.0	0.4	9.5	-1.9	-0.9	0	0
	<b>s2</b>	-1.1	-0.3	-2.7	-2.4	-1.2	-2.9	2.2	-10.	0.9	11.3	-1.6	-0.8	0	0

Source: Own calculations.

Without direct payments land prices decline in the largest new member states Poland and Romania as well as in Lithuania, Malta, and Slovenia while they increase in other countries (Table 6). As expected, after the introduction of direct payments higher prices for land can be observed in all regions, except for Slovenia<sup>7</sup>. The magnitude of changes shows the importance of the subsidy. In accession countries this development may lead to social disturbances since a high proportion of transfers from Brussels would then be received by land owners.

<sup>6</sup> In a few cases, especially in small countries, changes seem to be extremely high. This results from a very low initial production where small changes in real numbers lead to big changes in percentages.

**Table 6: Changes in land prices in NoDiPay and DiPay (in %)**

	BL	CY	CZ	ES	HU	LT	LI	ML	PL	RO	SK	SV	EU	ROW
<i>NoDiPay</i>	5	234	13	37	33	6	-2	-4	-17	-14	7	-20	0	0
<i>DiPay</i>	44	267	38	53	95	107	85	-4	21	27	53	-6	0	0

Source: Own calculations.

In scenario NoDipay, total trade balances in the new accession states, excluding Bulgaria, deteriorate (Table 7). This effect is intensified in scenario DiPay. Here we take a closer look at the results: Again, effects are not very homogenous across products or countries. With only a few exceptions (Czech Republic, Estonia and Lithuania) trade balance for non-agricultural goods in new member states are negatively affected. Due to the huge importance of these sectors, total trade balance effects are largely driven by this outcome. Concerning agricultural and food sectors, exports of highly subsidized commodities cattle, sugar, cattle meat and dairy are mainly growing, while the opposite is true for other crops, other animal products as well as other food products. No general trend can be observed for cereal and processed agriculture; oilseeds are hardly affected at all. Sugar plants and raw milk are restricted by production quotas.

The EU-15 and the rest of the world can improve their positions on international markets. However, looking at the new EU-27 as a whole the overall trade effect is negative. This results from the lower production in many sectors, especially outside agriculture, as described above, and changed trade protection. Tariffs are not only reduced within the new EU-27, but in many cases also between new member states and third countries. This strongly supports imports into the enlarged EU.

In contrast to trade balance, welfare, measured as equivalent variation, grows in all new member states. The same accounts for the EU-15 in scenario NoDiPay, while in scenario DiPay the welfare decreases in this region. This mainly results from the additional direct

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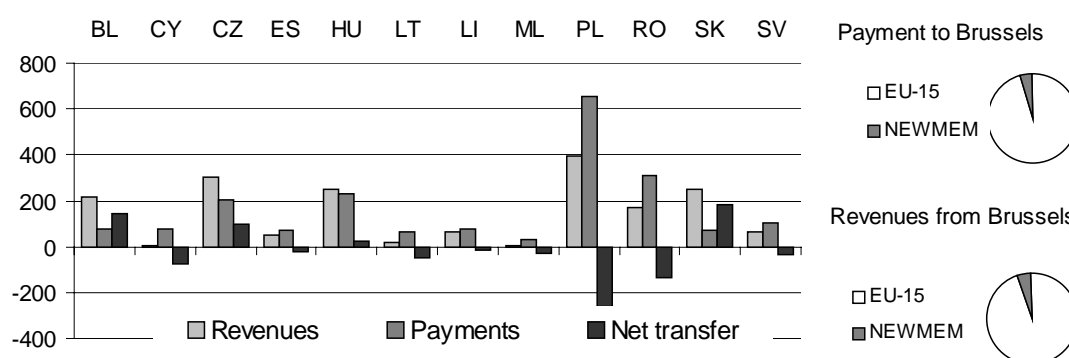
<sup>7</sup> Land prices in Malta are also declining, but since we have not introduced any direct payments in this region we cannot judge how prices would be affected by this instrument.

payments given to new member countries (see below) as well as lower positive allocation effects and higher negative terms of trade effects.

**Table 7: Changes in Trade Balance (TB) and Welfare (EV) (measured as Equivalent Variation) in Scenario NoDiPay and DiPay (in mill. US\$)**

		BL	CY	CZ	ES	HU	LT	LI	ML	PL	RO	SK	SV	EU	ROW
<b>TB</b>	NoDiPay	274	-346	-945	-96	-2060	-147	-1892	-298	-5062	-4404	-618	-948	1234	15308
	Dipay (total)	-266	-351	-1297	-155	-2556	-209	-2093	-298	-6340	-5624	-770	-975	4620	16310
	CEREALS	7	-5	7	6	152	-8	-14	4	-44	-45	12	-35	8	-63
	OILSEEDS	-2	1	-9	-2	1	-1	-3	0	-5	-4	-3	0	-15	33
	SUGARPLANTS	0	0	-1	0	-5	-2	2	0	0	0	1	0	1	4
	OTHCROPS	-17	63	-82	-22	-155	-21	-64	0	-376	-208	-44	-20	523	215
	CATTLE	1	0	23	0	-8	1	1	0	300	73	13	-2	-422	-16
	RAWMILK	0	0	-2	-1	-1	0	0	0	-2	-1	-1	1	9	-1
	OTHANIMAL	-3	4	-21	-10	-117	-5	-22	-1	-163	-93	-15	-18	283	162
	OTHFOOD	-48	-9	-228	-38	-223	-57	-283	-15	-901	-1347	-70	-348	2940	272
	PROCESSAG	12	3	32	-2	389	-22	-46	8	-494	-404	-32	-82	232	245
	SUGAR	239	-4	114	5	26	10	-3	4	121	-107	5	2	-107	-355
	CATTLEMEAT	122	9	-7	3	178	-2	1	6	237	-38	4	85	-497	-199
	DAIRY	35	11	60	42	94	88	110	6	145	-70	12	2	-340	-288
	OTHPRIMARY	-45	-18	-162	-9	-86	-6	-2	-6	-156	-176	-79	-20	-50	728
	MNFCS	-140	-136	972	58	-831	59	-815	-40	-2931	-2569	167	-30	-342	4845
	SVCES	-427	-270	-1993	-185	-1970	-243	-955	-264	-2071	-635	-740	-510	2397	10728
<b>EV</b>	NoDiPay	120	132	865	149	1489	93	661	33	2657	1522	603	328	831	-4899
	DiPay	206	133	942	157	1624	101	700	33	3066	1777	621	332	-56	-5221

Source: Own calculations.

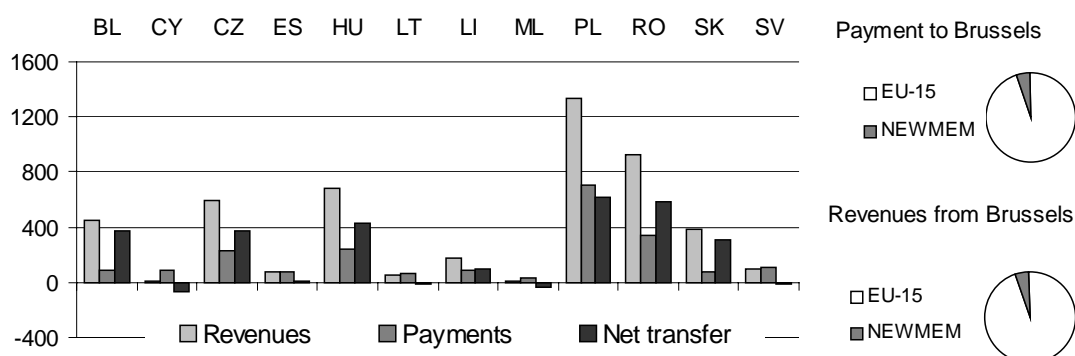


Source: Own calculations.

**Figure 1: Budget Effects for New Member States in Scenario NoDiPay (in mill. US\$)**

Without direct payments accession countries, obliged to pay a tax on their net domestic product and 90 per cent of the tariff income to Brussels, would receive only the reduced

export and output subsidies provided for by the Agenda 2000. Such a redistribution would be largely to the advantage of the EU-15 and produce eight new net payers that contribute to the EU budget. Only Bulgaria, the Czech Republic, Hungary and Slovakia would be net recipients. Biggest contributors within the accession states would be Poland and Romania.



Source: Own calculations.

**Figure 2: Budget Effects for New Member States in Scenario DiPay (in mill. US\$)**

These results of course have to be viewed under the given restrictions. Structural policies, the so-called second pillar of the CAP, are not included in the calculations. Since they account for a large part of the total EU budget and are of particular importance for accession countries, the inclusion of these payments would certainly change the picture.

Introducing direct payments generates higher revenues from Brussels and also in most cases reduced payments to Brussels due to lower imports from third countries. This effect appears to be the strongest in Poland. Consequently, with direct payments most countries would become net recipients, with Hungary, Poland and Romania receiving the largest net transfers. Generally, we observe that the importance of the new accession countries measured in their share in EU budget accounts for approximately 5%.

#### 4 CONCLUSIONS

The simulation with an extended version of the GTAP model shows that the accession of ten new member states into the EU leads to very heterogeneous country specific effects concerning production, trade, budget and welfare. Production effects in the new member

states are significant and mainly driven by initial differences in resources and protection. Crop as well as pork and poultry production in the accession countries mainly goes down, while output in cattle increases. Highly supported products like sugar, cattle meat and dairy also experience a production growth. Additionally, in most cases the transfer of direct payments to new member states tends to shift resources into agriculture. Due to adjustments in the tariff structure the trade balance deteriorates in most accession countries, which is even more pronounced when direct payments are introduced. In contrast to this, welfare effects are always positive for the new member states. Budget effects are strongly depending on the implementation of direct payments. Without this subsidy most candidate countries would become net payers, while with this payment they would be net recipients. However, this analysis does not consider the influence of structural policies transfers and therefore presents only a part of the total picture. Generally, the analysis has shown the importance of a country specific perspective. Depending on their initial situation different countries will experience different outcomes of the accession to the EU; those will most likely be missed in an aggregated analysis.

## REFERENCES

- Banse M. 2000. Macroeconomic Effects of EU Accession. In: Tangermann S., Banse M. (Ed.), Central and Eastern European Agriculture in an Expanding European Union. Wallingford: CAB international.
- Brockmeier, M. (forthcoming). Auswirkungen der EU-Osterweiterung auf den Agrar- und Ernährungssektor der EU15 – Simulationen auf der Basis eines erweiterten GTAP Modells.
- Commission of the European Communities 1998. 27th Financial Report on the European Agricultural Guidance and Guarantee Fund (E.A.G.G.F.) – Guarantee Section. Brussels.
- Commission of the European Communities 2002. Enlargement and Agriculture: Successfully integrating the new Member States into the CAP – Issues paper. SEC(2002)95 final. Brussels 30.1.2002.
- East Europe 2002. CEECs will not break EU bank. February 2002, p. 5–6.
- European Union 2002a. <http://europa.eu.int/comm/enlargement/enlargement.htm>. 24.10.2002
- European Union 2002b. [http://europa.eu.int/comm/budget/financing/index\\_en.htm](http://europa.eu.int/comm/budget/financing/index_en.htm). 7.10.2002
- Frandsen S.E., Jensen, H.G. 2002. The European Union: Expanding its Agricultural Domain. Paper, 5<sup>th</sup> Annual Conference on Global Economic Analysis Taipeh, Taiwan 5–7 June.
- Frohberg K., Hartmann M. 2001. Konsequenzen der Integration der MOEL. Agrarische Umschau, Nr. 2/3, S. 10–19.
- Hertel T.W. (Ed.) 1997. Global Trade Analysis: Modeling and Applications. Cambridge.
- Hertel T.W., Brockmeier M., Swaminathan P. 1997. Sectoral and Economy wide Analysis of Integrating Central and East European Countries into the European Union: Implications of Alternative Strategies European Review of Agricultural Economics. Volume 24-3/4.



Münch, W. 2000. Effects of an CEEC-EU Accession on Agricultural Markets in the CEEC and on Government Expenditure, in Tangermann S., Banse M. (Ed.), Central and Eastern European Agriculture in an Expanding European Union. Wallingford: CAB international.

Nielsen C. 1999. Enlargement of the European Union. SJFI Rapport No. 106, Copenhagen.