The Accession of Romania to the European Union – Scenario Analysis for Key Agricultural Crop Markets Using AGMEMOD Model

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Introduction

The last decade of the XX-th century has been for the Central and Eastern European Countries a time of dramatic economic and social changes. Reshaping the economy from a centrally planned model back to the market economy has been no easy task. Aiming the EU accession put new and significant challenges to these countries' policies, among which the agricultural ones have been really difficult. Moreover, the problem of the inclusion of the agricultural sectors of the candidate countries in the CAP has been longly debated in terms of means, timing and implications.

This poster presents the baseline and the scenario results for several main agricultural products of Romania's model developed as part of AGMEMOD model. The country model is an econometric, dynamic, multi-product partial equilibrium commodity model, linked with the other AGMEMOD country models through prices. The main target of this approach was to measure the impacts of introducing the Common Agricultural Policy (CAP) on the Romanian agricultural sector, assuming Romania's accession to the EU in January 2007.

Methodology

AGMEMOD is an econometric model of the EU-25 plus 2 candidate countries (Romania and Bulgaria) agricultural sector, built under a research project funded by the EU Commission. The model is combining and integrating individual country models. Each

country model is composed of several commodity sub-models. The model is generating projections for the main agricultural commodity markets in the 27 countries studied, year by year to a 10 year horizon.

The selected commodities are: soft wheat, barley, maize and sunflower. The data was collected and processed starting with the year of the enforcement of the country's European Agreement, up to 2002, with projections until 2010. The main difficulty regarding the data set resided in the large variation in the series, both in the macroeconomic data, and in the agricultural data (production, yields, area, prices, imports, exports).

For the generation of baseline scenarios, a number of macro-economic and policy variables have been used, such as real GDP, population, exchange rates, inflation rate etc. For each market the endogenous closure variable of the sub-model was determined by supply and by the use identity.

The Non-Accession scenario is the baseline, when no introduction of new agricultural policies, closer to those in the CAP, would occur, and the current policies applied as to 2001 would continue to be applied, under similar budgetary constraints.

The basic scenario used for post-EU acession is SAPS (Single Area Payment Scheme). The other policy variables included in the model are as established during the country's EU accession negotiations.

The modelling of policy variables in the SAPS has been an issue of particular difficulty, due to the use of inconsistent policies from one year to the other and as well inconsistent with CAP instruments. In the Romanian model, the various policies applied during the pre-accession period were handled using the same policy variable construct for the pre-accession and post-accession period. A subsidy per unit value of production was calculated and added to the producer price to create a 'basic price' (a constructed synthetic price). Such basic prices should reflect the changes in the nature and the value of the support that is given to

agriculture. For the pre-accession period we used the direct payments part of the PSE calculations, still assuming some sector specific impact. Direct payments are taken into account in the model with the help of multipliers. This concept makes it possible to proxy the impact of specific support schemes on the commodity market in question.

The description of the proposed policy modification starting from 2007 will include the following elements, important for the Romanian farmers starting with 2007:

- the commodity prices will grow; as a result the farmers' income will increase;
- direct payments will be top-up-ed by 30%;
- the application of the modulation mechanism, regarding rural development measures, as an alternative to reduce direct payments for some categories of farms.

All measures will push up Romania's agriculture from 2007 on, but low productivity will keep Romania to a long distance from EU Country Members.

For consistency reasons, rural development payments have been ommitted from modelling, although one could expect that LFA payments and scheme for semi-subsistence farms to have significant impact on modelling results.

Results and discussions of the scenario analysis

The producer prices show no significant change from the current level. Non-accession scenario shows stagnation (wheat) or even a slight increase for barley and maize. Things are different for sunflower, for which a more significant increase even in the non-accession scenario is seen (table 1). Accession under SAPS would decrease producer prices for wheat. On the other hand, prices for barley and maize are expected to increase till 2010. The price gain is even higher in sunflower.

Basic prices are generally higher than in 2001 in due to the increasing support, the only exception in wheat, for which during the pre-accession period, high and continuous price support has been applied.

The market prices for soft wheat, maize and barley increase slightly over the period (table1). The cereals prices increase corresponds to the new policy in the agricultural sector. The price modification is not a sign for changed productivity in farming, but is a result of inflation decrease and macroeconomic environment that sustained this trend. A high volatility of prices as in 1996-2001, which pushed prices up, will be impossible to be repeated in the situation of Romania accession to the EU.

The baseline projections for the selected crops area are shown in table 2. Both wheat and barley show a tendency to keep the actual area over time. This corresponds to keeping livestock numbers and production projected in the same period. Given the mostly static baseline projections for the analyzed crops, a possible question should be, where this area increase might come from. The Romanian model incorporates a comprehensive area allocation mechanism and thus the total agricultural area is fixed (at the level of the year 1996). Therefore, the baseline results show a decrease in the crops area. This means that there are resources to increase the area.

Under the accession scenario, wheat harvested area will increase to more than 2100 thou. ha. After negotiations Romania received 2273 thou. ha. We suppose that market reasons will result in a limited growth of the wheat harvested area. There are land resources for the increase, but market opportunities provided by wheat will not sustain the increase of the harvested area. Practically, the stabilization of harvested area is a result of applying coherent policy measures. The CAP will provide a sound policy rules for this commodity. A 10% increase, starting with the end of negotiations until 2010 is sustainable, based on a stable macroeconomic framework. All these considerations can be extended to the barley harvested

area. It should be mentioned that the barley harvested area increase can be sustained up to around 570 thou. ha. (proposed to the EU).

The baseline projections for the feed use show that the feed usage of wheat and barley remains relatively stable, while maize feed usage increases. Maize feed increases strongly, but this trend isn't based on market reasons. Maize is a traditional commodity for animal feed in Romania.

Feed use didn't show important changes in the scenario projections because it will be restructured and modernized until 2009. Maize for feed will show positive trends because this commodity is a traditional one. Up to 45% of the feed maize will be for self (on-farm) consumption.

A significant increase will be seen for barley, up to about 800,000 tones, as has been mentioned in the negotiations documents. Step by step the market reasons will replace traditional reasons in the Romanian agriculture. This issue will be an important step towards its modernization. Same situation is recorded for wheat; practically keeping the trend we remain at baseline, and this means that not market reasons sustain the trend. Self consumption is another strong reason that keeps this trend. When the EU support policy will be implemented in Romania, perhaps all reasons will change and most of them will be oriented to the market.

In the two scenarios, the total harvested area under all three types of grain will increase during the simulation period from 2001 until 2010 (table 2). Comparing A-SAPS and N-Ac scenarios the sown areas under soft wheat, barley and maize could increase by 350,000 hectares, by 100,000 ha more than in the non-accession scenario. The gain of area under sunflower oilseeds is shown in both scenarios, but the greatest increase would take place for the sunflower area in the accession scenario in 2007 (by 15%).

Yields are expected to increase during the simulation period in both scenarios. Most significant increase of yield is expected for soft wheat and sunflower (by 48% each), followed by maize (by 40%), while barley will remain rather constant in yields (table 2). The growth in yields is expected consequently to increase (but still, to quite moderate levels compared to the EU) fertilizers' use. The yields still remain rather low as compared to those of the old EU member states (OMS) and those of the new member states (NMS), due to small size of farms and low level of agricultural technology; maize is the best example: yield would be in 2010 (A-SAPS scenario) by 40% higher than today, but would also be less than half of the yields in the other EU members.

Consequently to the growth in grain yields and areas, according to the simulation results, production of grains in non-accession scenario is expected to increase. This is true also for accession scenarios, where the highest production increase is forecasted in sunflower (by 68%) and wheat (by 60%). Increase in the maize production is less spectacular (by 44%), while barley production is decreasing before accession (2007), and then the trend resumes a moderate growth until 2010.

A significant increase for wheat and maize is expected as well as on the demand side. Demand for wheat could be connected with the increased production and consumption of value-added bread and bakery products that resulted consequently to important foreign direct investment in the sector. On the other hand, the feed demand for maize is expected to grow more intensively in line with further increase of productivity in livestock production. The consumption of sunflower is also expected to grow in the accession scenario, but not as intense as in the non-accession scenario (table 2).

The significant increase in domestic use of wheat compared to slower upward tendencies in production will result in a moderate wheat quantity needed to be imported (about 300,000 t) in 2010 versus 2001 or 2005, in order to cover the need for domestic consumption. Barley

is as well expected to see some imports, but not of importance. On the other hand, significant exports are expected, increasing strongly during the analysed period in both scenarios, more intensely in the accession one, when exports might be as large as 1/3 of the total production.

Conclusions

The main conclusion coming from the analysis of the baseline scenario is that under these particular conditions (non-accession), rather few changes in the Romanian agricultural production would have occurred (except some products such as wheat and sunflower would show a production higher than the average, as high as in the best agricultural years). Yet, structural changes in the agrifood sector, together with better functioning input and output markets, as well as increased consumers' incomes are on their way, and achievable irrespectively of the accession process. This would result in a certain positive evolution of production and consumption for wheat and sunflower, and some stagnation in barley and maize.

Despite the good soil conditions and growth potential coming from improved production structures, Romania would remain, at least on short term, a net importer of wheat and barley. This grain sector is relatively uncompetitive, since production on large scale farms enjoying full benefits from economies of scale based upon modern technology with intensive use of inputs and machinery is still rather limited. Over the medium term, Romania is expected to show improved grain yields and production, which will allow larger surpluses for export

The Accession (A-SAPS) scenario of the model indicates a significant positive effect upon the wheat, maize and sunflower production. Together with a moderate increase in the consumption of these products, overall some surpluses for export would be available, modest for maize, but significant for sunflower. This will allow Romania to preserve its position of major producer and exporter of sunflower seeds in Europe.

Poor economic efficiency, due to small size of the farms do not allow an immediate spectacular development of the sector. Yet, pre-accession support programmes (such as SAPARD) and post-accession support will most probably induce a rather quick land consolidation and the development of medium-size commercial family farms.

Table 1: Producer and basic prices for selected crops (€ / 100 kg)

Crop	Price	2001	2007		2010	
		N-ac	N-ac	A-SAPS	N-ac	A-SAPS
Soft wheat	- producer price	10.60	10.91	10.99	11.00	10.99
	- basic price	11.60	10.99	10.99	10.93	10.93
Barley	- producer price	7.15	8.22	10.99	10.02	10.93
	- basic price	9.69	10.99	10.99	10.93	10.93
Maize	- producer price	12.94	15.40	16.00	16.20	15.79
	- basic price	11.91	16.00	16.00	15.80	15.79
Sunflower	- producer price	175.2	219.0	223.23	231.80	278.16
	- basic price	175.2	219.0	223.23	231.80	278.16

Source: model calculations

Table 2. Model results for selected crops

Crop	Indicator	2001	2007		2010	
		N-ac	N-ac	A-SAPS	N-ac	A-SAPS
Soft wheat	- area ('000 ha)	1954	2069	2100	2073	2106
	- yield (t/ha)	2.28	3.04	3.09	3.33	3.38
	- production ('000 t)	4455.1	6288.5	6478.5	6902.6	7125.3
	- consumption ('000 t)	5126.1	6365.2	6560.5	7116.1	7339.9
	- net trade ('000 t)	-275.0	-173.6	-176.2	-328.3	-333.6
Barley	- area ('000 ha)	493	471	478	487	495
	- yield (t/ha)	3.21	3.14	3.15	3.16	3.17
	- production ('000 t)	1583.5	1481.5	1503.7	1539.7	1564.3
	- consumption ('000 t)	1581.5	1417.8	1517.5	1425.0	1582.7
	- net trade ('000 t)	12.5	-17.8	-18.0	-17.7	-17.9
Maize	- area ('000 ha)	3058	3147	3210	3195	3259
	- yield (t/ha)	3.04	3.58	3.65	4.19	4.27
	- production ('000 t)	9295.6	11266.3	11721.5	13386.1	13363.0
	- consumption ('000 t)	10992.5	11058.5	11509.5	13209.4	13182.7
	- net trade ('000 t)	164.5	155.8	158.9	159.1	162.2
Sunflower	- area ('000 ha)	790	906	915	893	902
	- yield (t/ha)	0.94	1.21	1.32	1.27	1.38
	- production ('000 t)	744.0	1097.0	1130.0	1206.7	1243.0
	- consumption ('000 t)	667.0	827.4	777.4	835.7	785.1
	- net trade ('000 t)	86.0	270.0	344.0	328.4	456.8

Source: model calculations

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