Does accession to European Union substantially change the economic situation in Croatian agriculture: impact assessment for key production sectors on the basis of static deterministic farm revenue modelling

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ABSTRACT

The purpose of the paper is to assess the impact of introducing the Common Agricultural Policy on Croatian agriculture and on individual production sectors. The scenario analysis is made using a static deterministic model which simulates the changes brought about by the differences in prices and budgetary transfers. Compared to the base year, the total agricultural budget is estimated to increase by around 40 % in the first year after the accession and by almost 70 % in the fourth year, after the expiry of the transitional period. The aggregate prices in agriculture are expected to drop by around 4 % after the accession. According to the optimistic scenario, the revenues are expected to slightly increase (by around 1 %), and by a pessimistic scenario, revenues could drop substantially (by around 13 %). The revenues in crop production are expected to remain at the same level also after the accession. Revenues in livestock production are expected to drop according to all scenarios. The largest drop in revenues is expected in pig and milk production.

Key words: Croatian agriculture, European Union accession, Economic Accounts for Agriculture

INTRODUCTION

Due to the differences in production potentials, structure of agriculture, prices and volumes of production as well as different agricultural policy measures, the EU accession is a huge challenge for every country. By the date of accession, a country needs to be prepared for the Common Agricultural Policy (CAP), its complex administration and measures. After the accession, a new model of supports is introduced, which is usually different from the existing policy in terms of the amount of support and the content of measures (Volk 2004, Erjavec 2007). In this sense, the implementation of the EU model of agricultural policy will be a special challenge also for Croatia as the next new EU Member State.

As the CAP has been constantly changing, it is a moving target for all candidate countries. This will even more be the case for all future enlargements, although the reforms have so far shown certain stability of changes (Tracy 1997, Garzon 2006, Swinnen 2008). The agricultural policy goals have formally not changed since the beginning, and they are primarily related to securing the income to rural population, stabilising the market and increasing productivity and competitiveness of food production. The first important reform was the one in 1992, which took place under the pressure of international trade negotiations (today WTO);

because of the decreasing levels of prices it introduced area and headage payments and gave a special significance to the rural development policy (Tracy 1997). The EU enlargement, new demands of the WTO members, as well as the definition of a new role of agriculture in the society led to new reforms, which started in 2003 and ended in 2008 (Swinnen 2008). The essence of these new reforms was further market deregulation, introducing the principle of direct payments decoupled from production, and strengthening the rural development policy.

The main concept of the policy remains the same, in particular the system of measures' implementation, and all the changes always carry the elements of the previous policy (Garzon 2006.). Thus, the main outlines of the future measures can to a certain extent always be predicted (Moyer and Josling 2002).

The reform of the policy and support to agricultural restructuring can strengthen the integration processes in agriculture (Erjavec 2004, 2007). The goal is to reduce the negative and to increase the positive effects of EU integration. In every country a large part of the measures is usually not compatible with the CAP; if they were retained by the very accession, it would give a wrong signal to the producers. It is therefore rational and useful for the policy to gradually adapt to the principles and requirements of the CAP. This is not

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possible without the reform of the policy and strengthening of the budgetary support to agriculture.

The process of reforms and adaptation after the accession can be supported by the assessment of the potential economic changes in agriculture. Using various types of models (static deterministic models, partial or general equilibrium models, programme models), agrarian economists made assessments of the changes in prices, budget, supply, demand, foreign trade, revenues, agricultural income, structure of holdings and other indicators relevant for agricultural policy. A bulk of such research has been made in the history of integration processes (Erjavec et al. 1998, Banse 2000, Muench 2000, Erjavec et al. 2006), which more or less successfully anticipated the post-accession changes. For Croatia no research has so far been available which would provide a simulation of the potential situation in agriculture after the accession in an integral, academically objective and neutral manner.

The objective of this paper is therefore to present the first relatively rough assessment of changes in Croatian agriculture brought about by the EU accession and introduction of the CAP. The paper presents the main results of the study commissioned by the Ministry of Agriculture, Fisheries and Rural Development of the Republic of Croatia (Erjavec et al. 2011). Given the relatively short deadlines, it was only possible to build a static deterministic model simulating the changes brought about by the differences in prices and budget. It is static because it does not include the changes in the volume of production, and deterministic because the elements of changes are defined outside the model on the basis of the analysis of prices in other countries which acceded to the EU and on the basis of already determined (by the limits of the future support under the CAP pillars as set out in the recently accomplished Croatia's negotiations with the EU) or planned budget of Croatia after the accession. The changes in revenues are analysed based on the fixed volume of production in various years before and after the accession. The concept of the model also enables a detailed analysis by agricultural sectors. A similar approach was also used in the agricultural studies that were made for the purpose of the unification of Germany, accession of Austria and Finland in 1995 as well as the accession of Slovenia and some other countries during the last EU enlargements.

MATERIAL AND METHODS

The level of prices of agricultural products in Croatia compared with the EU Member States was estimated on the basis of statistical data on average producer prices of selected products. The National Statistical Office data were used for Croatia (DZS RS 2011) with prices being converted from the national currency to EUR using the average annual exchange rate of the Croatian National Bank (DZS RH 2010d). Prices in the EU Member States were taken from the EUROSTAT database (EUROSTAT 2011). The analysis deals with the period 2000-2009 and includes 38 individual agricultural products, which are assembled into three basic groups: a) *arable crops* (wheat, barley, oat, maize, rapeseed, sunflower, soy bean, sugar beet, tobacco, potatoes); b) *fresh vegetables* (cauliflower, tomato, cabbage, lettuce, cucumber, water melon, paprika, carrot, red onion, peas, beans), *fruits* (apples, pears, peaches, sour cherries, plums, mandarins), *wine* (grapes, quality wine, table wine) *and olive oil*; and c) *animals and animal products* (young cattle, pigs, chickens, lambs, raw cow's milk, fresh eggs, honey).

Only the data on prices at the level of a Member State are available for the EU. The average price for the EU is calculated only for the products for which relevant data are available for at least 6 countries for the entire period 2000-2009 (approximately one-quarter of all Member States). The EU average price is in this case calculated as an arithmetic mean of the prices of all the Member States with complete data. As a detailed analysis of the level and changes of prices in Croatia and the EU revealed a great instability of prices, the average prices in the period 2007-2009 were taken as the representative level for most of the selected agricultural products.

The representative prices of selected agricultural products for Croatia serve as a *baseline scenario* of prices. This scenario is used as a basis for assessing the changes in prices after Croatia's accession to the EU. When assessing the possible changes in prices, the general presumption was that after the accession the level of prices in Croatia will be brought into line with the prices in the EU. This means that the prices of products in Croatia that are today relatively high compared to the prices in the EU can be expected to drop after the accession and vice versa. As the prices in new Member States are on average lower than prices in old Member States, the level of prices in new Member States (in particular the neighbouring ones) was taken as the basic reference for Croatia. For a great majority of products, prices vary considerably among individual countries; thus indicating that the prices in the EU are actually formed under the influence of a number of factors, from the quality of products to the volume of production and development of the market. These factors therefore served as an additional criterion also when assessing possible changes of prices in Croatia.

The assessment of the changes in prices (as well as revenues) was made using three scenarios, which were based on different general presumptions:

- *The realistic scenario* - **sR** (the most probable one) presumes that the prices in Croatia will largely be formed close to the prices in new Member States and that for the most important products the situation on the market will not change considerably;

- *The pessimistic scenario* - **sP** presumes that because of the pressure from open market, the prices of the majority of products in Croatia will be formed close to the average of the most competitive EU members (large producers and exporters); this represents theoretically lower level of possible changes;

- *The optimistic scenario* - **sO** presumes that Croatia will seize the new opportunities of the large common market (easier exports) and at the same time to preserve a considerable part of the domestic market; this level presents theoretically upper level of potential changes.

The extent of potential price changes was set for each product separately depending on its specificities. The final assessments for all three scenarios were a result of several rounds of coordination of assessments with the experts from

the Croatian Ministry of Agriculture, Fisheries and Rural Development.

To assess the impacts of budgetary payments on revenues, the agricultural policy measures were classified according to their direct or indirect impact on farmers' revenues. In this context, five large groups were formed:
1. *production coupled direct payments of the Pillar I* (in the detailed analysis they are further grouped into output, area and headage payments and production coupled payments in transitional period);
2. *production decoupled payments of the Pillar I* (in the detailed analysis they are further grouped into payments under single payment scheme (SPS) and payments based on historical entitlements);
3. *compensatory allowances of the Pillar II* (income payments

of the Axis 2 of Pillar II: payments for less-favoured areas (LFA) and agri-environmental payments);
4. *payments of the Pillar II for increasing competitiveness* (investment support of the Axis 1)
5. *budget for other agricultural policy measures of the Pillar II* (non-income payments of the Axis 2; measures under the Axis 3, LEADER, technical assistance).

The data on the budget were prepared for 2009 (the base year), the year of accession (A=2013), the first year after the accession (A+1=2014) and the fourth year after the accession (A+4=2017), i.e. the first year after the expiry of the period for which Croatia negotiated certain derogations from the CAP rules (preserving of the 'state aids' for selected products, which are fully financed from the national budget - Table 1).

For the assessment at the level of agriculture as a whole,

Table 1: Basic data on the budget by the groups of measures and by sources, for base year and years after the accession (in EUR million)

	2009			A			A+1			A+4		
	Total	CRO	EU	Total	CRO	EU	Total	CRO	EU	Total	CRO	EU
Total Pillar I	387.4	387.4	0.0	378.3	283.7	94.6	378.7	204.4	174.3	379.8	189.9	189.9
1. Production coupled	176.4	176.4	0.0	50.7	43.4	7.3	50.7	37.2	13.5	27.5	13.8	13.8
Payments by kg, ha, head	176.4	176.4	0.0	27.5	20.2	7.3	27.5	14.0	13.5	27.5	13.8	13.8
Transitional payments	0.0	0.0	0.0	23.2	23.2	0.0	23.2	23.2	0.0	0.0	0.0	0.0
2. Production decoupled	211.0	211.0	0.0	327.6	240.3	87.2	328.0	167.2	160.8	352.3	176.1	176.1
SPS	211.0	211.0	0.0	261.1	191.5	69.5	261.5	133.3	128.2	285.8	142.9	142.9
Historical	0.0	0.0	0.0	66.5	48.8	17.7	66.5	33.9	32.6	66.5	33.3	33.3
Total Pillar II	110.5	102.0	8.5	140.1	85.1	55.0	316.7	73.8	242.9	465.0	108.6	356.4
4. Axis 1	80.2	71.7	8.5	39.9	10.0	30.0	129.0	32.2	96.7	180.9	45.2	135.7
Axis 2	15.8	15.8	0.0	71.2	68.0	3.2	94.4	18.9	75.5	134.7	26.9	107.8
3.1.LFA	12.3	12.3	0.0	36.6	35.4	1.2	45.4	9.1	36.3	45.4	9.1	36.3
3.2. Agri-environment	3.5	3.5	0.0	33.5	31.5	2.0	43.7	8.7	35.0	65.4	13.1	52.3
5.1. Axis 2 other	0.0	0.0	0.0	1.1	1.1	0.0	5.3	1.1	4.2	23.9	4.8	19.1
5.2. Axis 3	0.0	0.0	0.0	27.6	6.9	20.7	81.0	20.2	60.7	130.7	32.7	98.0
Pillar II other	0.0	0.0	0.0	0.0	0.0	0.0	4.9	1.0	3.9	10.7	2.1	8.6
5.3.Leader	14.5	14.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.4.Technical assistance	0.0	0.0	0.0	1.4	0.3	1.1	7.6	1.5	6.1	8.0	1.6	6.4
Transfer to Pillar I	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*75.9*	*15.2*	*60.7*	*0.0*	*0.0*	*0.0*
Total	497.9	489.4	8.5	518.4	368.9	149.5	695.4	278.2	417.2	844.8	298.5	546.3

the data as shown in the Table 1 are sufficient. However, to assess the impact of budgetary supports on the revenues by products, further disaggregation was required.

Only the payments of the Pillar I are disaggregated by individual products. Production coupled payments, as well as historical entitlements are allocated directly to products to which they refer. In the base year, production de-coupled payments are allocated on the basis of the data of the Agency for Payments in Agriculture, Fisheries and Rural Development (APAFRD) and the Croatian Agricultural Agency (CAA) on payments by products, whereas after the accession the total of these funds will be allocated according to a specific key.

For the period after the accession, all direct payments were defined on the basis of the programme of transformation of

individual measures as set out in the Act on state support to agriculture and rural development (NN 92/2010). It is assumed that there will be no difference in single area payments (the same single payment per ha for all land uses except for pastures and meadows), and the following two-phase procedure is used for their allocation by commodity:
• first phase: calculation of area payment on the basis of area under individual commodity in the base year and the unit value of payment in the period after the accession;
• second phase: allocation of the difference in the value of payments (total funds in the period after the accession less the total amount calculated in the first phase).

Mathematically, this procedure can be written down as follows:

$$BPpi=HaAi*bpP+((HaSi-HaAi)/(\Sigma HaSi-\Sigma HaAi))* (\Sigma BPp-\Sigma HaAi*bpP) \qquad (1)$$

With the individual signs having the following meanings:

$BPpi$ = funds for area payments for commodity i after the accession (in EUR)

ΣBPp = funds for area payments after the accession (in EUR)

$HaSi$ = area under commodity i by the statistics in 2009 (in ha)

$HaAi$ = area of commodity i included in payments according to APAFRD in 2009 (in ha)

bpP = single area payment after the accession (in EUR/ha)

The above described procedure of the allocation of the difference is based on the presumption that the producers of the commodities with the payments in the base year will apply with the same areas also after the accession. The areas which were not included in the system of payments in the base year will be included proportionally to the ratio between the total non-included areas in the base year and additional areas included in the system after the accession. By this procedure, production de-coupled area payments are distributed to all commodities from the list of Economic Accounts for Agriculture (EAA), regardless of whether they were included in the system of payments in the base year or not.

Based on the above described procedures, a part of the Pillar I payments are allocated to the commodities which are as a rule not market goods (meadows, fodder plants). These payments are eventually realised in livestock breeding. The same also applies to other products which the farm produces and uses as animal feed. In Croatia, a large part of cereals is used for this purpose (low rate of market production of cereals). Therefore, in order to obtain a more realistic picture for livestock breeding, direct payments for non-market crop production used as animal feed are in the last stage transferred to livestock breeding. The procedure is based on the expert assessments of the share of areas used for animal feed directly on a farm; and the structure of consumption of these products by types of livestock.

It has been assessed that a part of payments for cereals and all payments for fodder plants are realised through livestock breeding (animal feed on arable land and meadows). The structure of consumption by types of livestock was assessed on the basis of the number of livestock in the base year (DZS RH 2010a) expressed in livestock units, estimated technologies and estimated feed ratio.

The model used for the assessment of changes in revenues after Croatia's accession to the EU is a static deterministic model. This means that the model presumes a fixed technology, structure and volume of production and that all the changes in revenues are exclusively a consequence of changed prices and the level of direct payments. The model is based on the Economic Accounts for Agriculture (EAA) for Croatia (DZS RH 2010b and 2010c). 2009 is used as a base year. In the model, the revenue is defined as a value of production in producer prices increased by the value of direct payments.

Changes in prices according to various scenarios enter the model as an index of prices at the level of a product. In addition, the value of direct payments for each product is also taken as an entry data in the model. The revenue for various scenarios and periods is calculated using the following procedure:

$$Rijn=RBi*PIij+Bin \; ; \; iARjn=\Sigma Rijn \qquad (2)$$

With the individual signs having the following meanings:

R = revenue; AR = agricultural revenue (aggregate) (in EUR)

RB = value of production in producer prices in the base year (in EUR)

PI = price index estimate

B = estimated budget for direct payments (in EUR)

i = type of product (wheat, maize, etc.)

j = type of scenario for prices (sR-realistic, sP-pessimistic, sO-optimistic)

n = period of assessment (B-base year, A-accession, A+1-first year after accession, A+4-a year after transitional period)

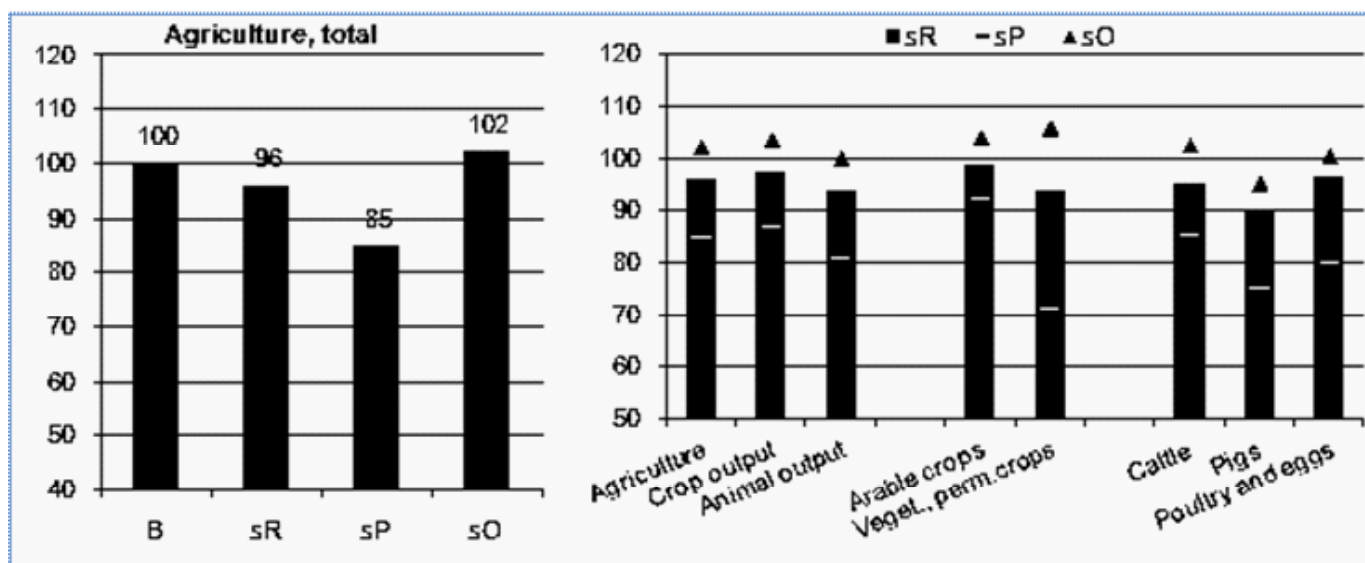Scenarios for prices are not determined by time (they do

Figure 1: Aggregate price indices after the accession (base period = 100)

not change by periods). Only the level of direct payments changes by time. The final results matrix is therefore a combination of price scenarios and different levels of direct payments in selected years after Croatia's accession to the EU (Erjavec et al. 2011).

RESULTS AND DISCUSSION

Based on the assessments of changes by individual agricultural product, the aggregate price index shows that the prices of agricultural products in Croatia will most probably fall after its accession to the EU (Figure 1). According to the pessimistic scenario (sP), prices could drop by around 15 % and according to the optimistic scenario (sO), they could even rise by 2 %. It is the most realistic to expect (sR) a drop in prices at the aggregate level by around 4 %.

According to assessments, the drop is expected to be larger in livestock breeding than in crop production. The prices of all livestock products, in particular pigs, are relatively high before the accession (in comparison with prices in the EU countries). In crop production, smaller changes are expected in arable crops and greater changes in permanent crops and vegetables. The projections of prices in vegetable, fruit, wine and olive oil production are very uncertain. They could see either a large drop or a large rise in prices.

According to the projections, the total budget for agriculture is expected to strongly increase after the EU accession (Figure 2). Compared with the base year, the total budget for agriculture will be around 40 % higher in the first year after the accession (A+1) and by almost 70 % in a year after the expiry of the transitional period (A+4). The national sources of financing agricultural policy measures will be decreasing and the financing from the EU funds will be increasing.

As even before the accession Croatia has relatively high direct payments (higher than most Member States), no rise is expected in this group of measures. Compared to the base year – 2009, a slight drop by around 5 % is expected after the accession. However, the budget for rural development measures is expected to increase considerably.

Despite the expected huge rise in the total budget for
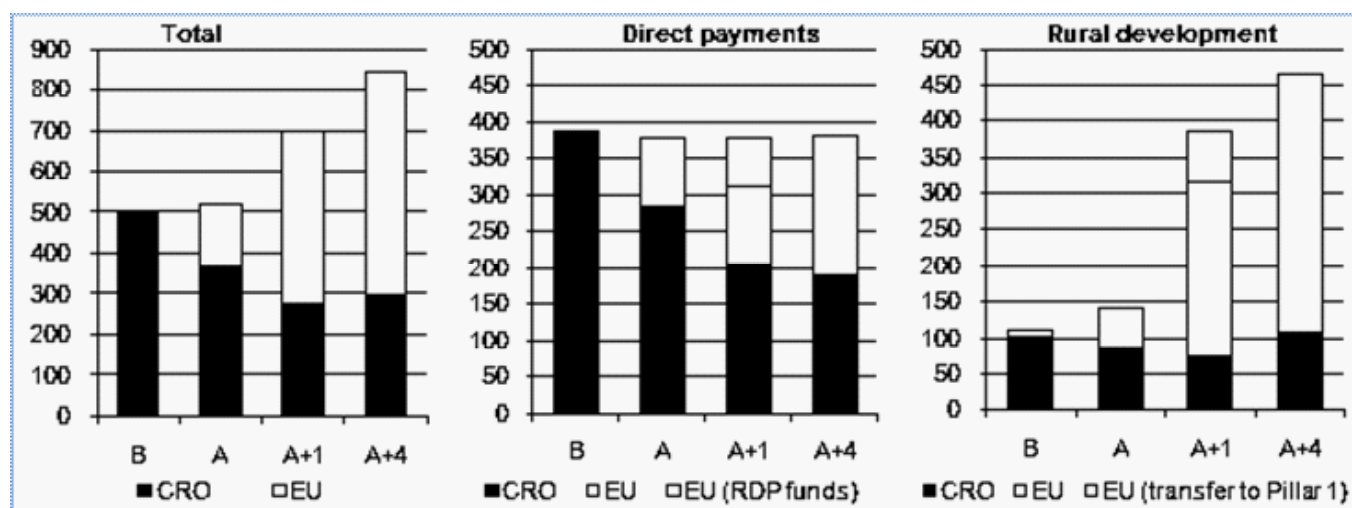
Figure 2: Total budget for agriculture by pillars and sources of finance; before and after the accession (in EUR million)

agriculture, the direct effect of budgetary payments on the revenue of producers will be relatively small. Direct payments at the aggregate level will not increase. Only producers in specific areas (LFA) and producers with specific production technologies (agri-environmental measures) can expect a rise in revenues from higher budgetary payments.

According to the initial plan, a large share of the total budget for agriculture will be earmarked for strengthening the competitiveness of agriculture (Axis 1). These payments have no direct effect on the current revenues, but by rising competitiveness, producers could increase the revenues in the long term. In theory, these are the most efficient measures in the long term, but only if they are really earmarked for increasing productivity and efficiency of production. A part of the measures of the Axis 2 and most of the measures of the Axis 3 have no direct effect on producers' revenues.

By adopting the CAP and entering the EU, the form of the direct payments will also change (Figure 3). There will be

less and less measure linked directly to production (output payments, specific area or headage payments). After the transitional period, in which a part of production coupled payments for tobacco, sugar beet, milk and olive oil will be preserved, most production coupled payments will be abolished, except a part of the payments for suckler cows, sheep and goats. A considerable part of the production coupled payments will be transformed to historical entitlements (milk and tobacco output payments, a part of payments for cattle, sheep and goats). The volume of production decoupled payments in the form of single area payments (SPS) will increase.

Changes in the system of direct payments will also result in a redistribution of payments among the products. The amount of direct payments will decrease for the products for which production coupled payments will be abolished and which at the same time will not be transformed (or not fully transformed) to historical entitlements. This will result in
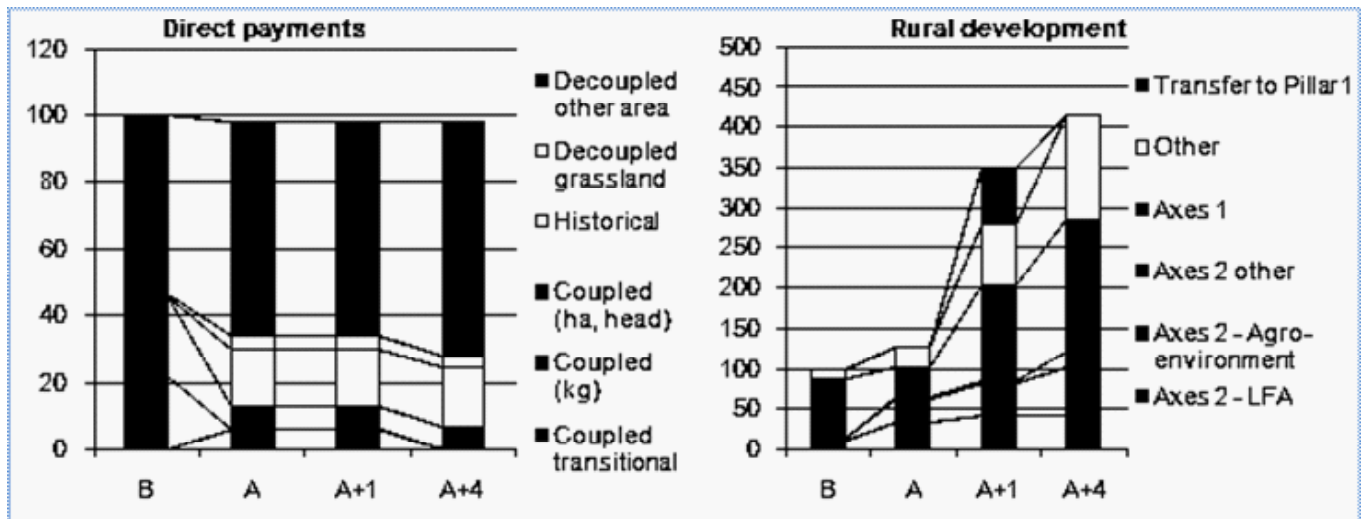
Figure 3: Budget for direct payments and rural development by types of payments; before and after accesion (index; base period =100)

lower payments for pigs, milk, cattle, sheep and goats, and after the expiry of the transitional period also for tobacco, sugar beet, and olive oil. During the transitional period, abolishing of production coupled payments for tobacco, sugar beet and olive oil, and in livestock sector for pigs and milk (payments for dairy cows), will be partly compensated for by the transitional payments (state aid), which will be financed exclusively from the national budget (Erjavec et al. 2011).

For some products, the redistribution will result in higher payments. After the accession, production decoupled area payments will be levelled for all agricultural land uses (except meadows and pastures), and there will be more areas included in the direct payments system. The rise will thus be recorded for the commodities which were in the base year not included in the direct payments system or were included to a smaller extent (smaller areas) or with smaller payments per unit. A rise can be above all expected in the fruit and vegetable sector. As a result of more areas under meadows and pastures included in the payment scheme, the proportion of payments for these areas in total payments will increase considerably.

The effect of changed level of direct payments on the revenues in individual agricultural sector will not only depend on the relative changes in the level of payments, but also on the share which direct payment contributed to revenues in the base period. A relative share of direct payments in the revenue differs across the sectors. It is the smallest in poultry production, representing only 2 % (practically only a part of the payments transferred through animal feed). Thus, the changes in the level of direct payments in this sector will have practically no effect on the level of revenues. Here, everything will depend on prices. The situation will be different in pig sector, crop production and in particular in cattle breeding. In these sectors, changes in direct payments more strongly affect the level of revenue, considering their relatively high level in the base period.

On the aggregate level of agriculture, direct payments represented around 14 % of the revenues in the base year. After Croatia's entry to the EU, the total budget for direct payments will remain approximately on the same level as in the base year (a drop by 2 %). Changes in total revenue will be thus almost exclusively a consequence of changes in prices. It
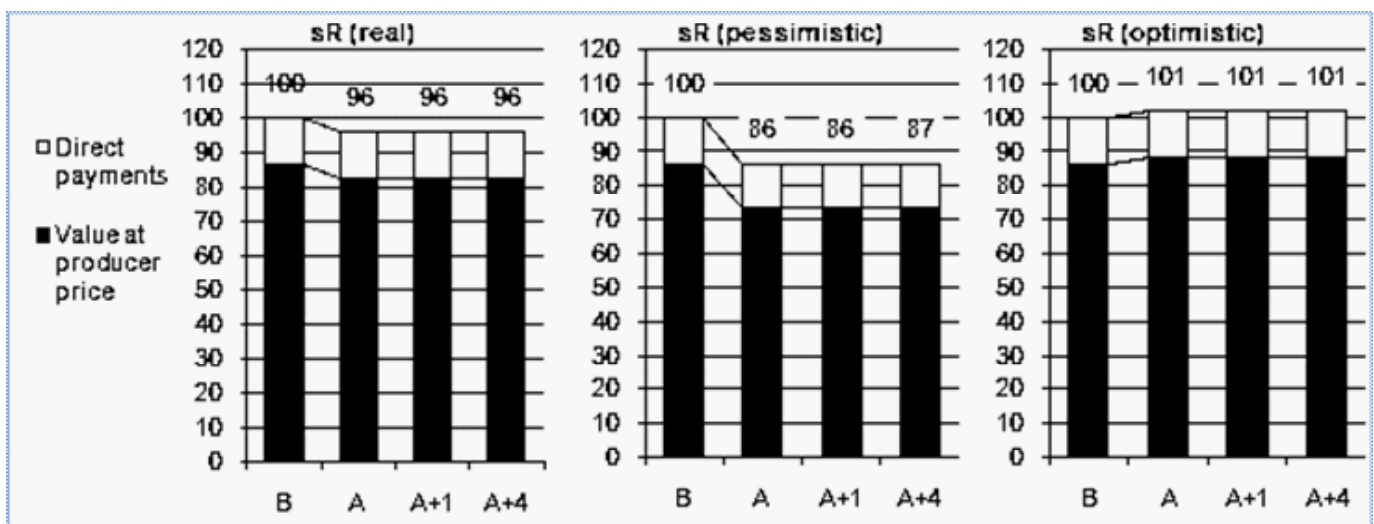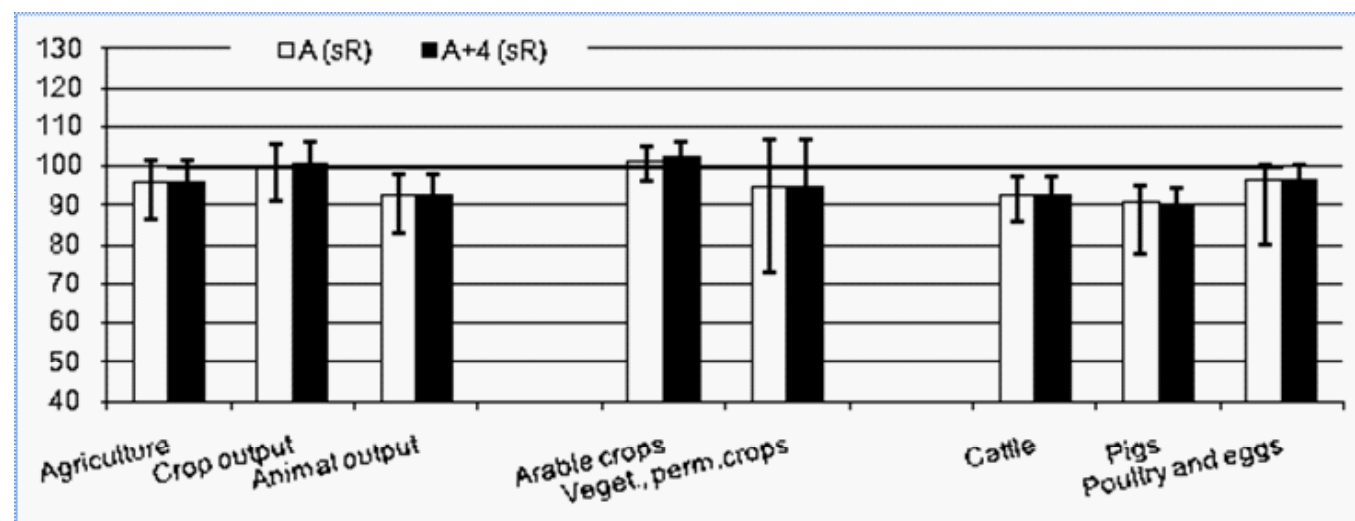

Figure 4: Estimated changes in revenues in agriculture after accession to the EU (index; base period =100)

is estimated that after the accession the agricultural output at producer prices will drop by around 4 % (realistic scenario), which will be fully reflected in the estimated changes in total revenues (figure 4). According to the optimistic scenario, a slight rise in revenues can be expected (by around 1 %), but a considerable drop (by around 13 %) according to the pessimistic scenario.

According to the realistic scenario, revenues in the crop production are expected to remain on the starting level even after the accession, as a result of a slight drop in prices and a rise in direct payments (figure 5). At the end of the transitional period (A+4), the revenues will further slightly increase as a result of higher direct payments. The optimistic scenario points to a possibility of a slight rise in revenues and the pessimistic one indicates a slight drop. For vegetables and permanent crops, it is realistic to expect a slight drop in revenues, although any predictions for this group of products are very uncertain.

Red vertical lines indicate the range of estimated changes from optimistic (upper limit) to pessimistic scenario (lower limit)

Figure 5: Estimated changes in agricultural revenues after EU accession by production groups (index; base year =100)*
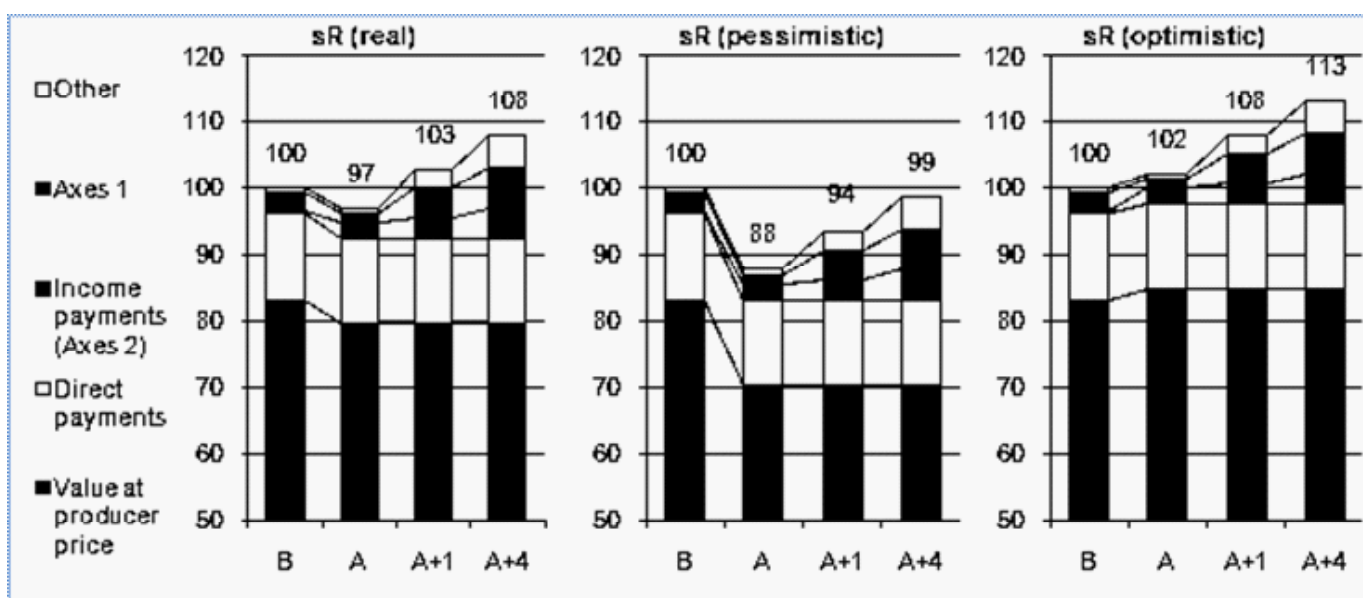
Figure 6: Estimated changes in agricultural revenues including the Pillar II payments after EU accession (in dex; base period =100)

As regards livestock sector, all scenarios point to a drop in revenues. Because of lower direct payments, revenues will go down more than prices. Revenues are expected to drop the most in pig (a substantial drop in prices) and milk production (a considerable drop in direct payments), slightly less in beef sector and only slightly in poultry sector (Erjavec et al. 2011).

In addition to prices and direct payments, also some other agricultural policy measures affect the income position of agriculture. A part of the payments of the Axis II of the rural development (LFA and agri-environmental payments) directly increase the revenues of a part of agricultural holdings.

The income payments of the Axis II were low in the base year, but they will substantially increase after the accession (Figure 6). After the accession, their contribution to total revenues will accordingly to the realistic scenario compensate for the drop in revenues stemming from prices and direct payments. In the second year after the accession, the total revenue will be slightly higher than in the base period, and at the end of the transitional period, it will be higher by around 9 %. Payments under the Axis 1 (competitiveness – various forms of investment support) do not count as income payments, but they still represent support to agriculture.

It should be mentioned that the results of the analysis of the effects of accession on the aggregate level are only one aspect of the analysis. The effects on the level of agricultural holdings can be entirely different. On this level, a lot will depend on the production structure, as well as on the preparedness and knowledge of producers to seize the opportunities of the CAP, but above all on their readiness and ability to adapt to the changes in the market.

CONCLUSIONS

The study provides the first assessment of possible changes of economic results in Croatian agriculture after the EU accession. It assesses the potential extent of changes in prices, budget and revenues across all the important agricultural sectors. The potential extent of changes is relatively wide, as it is difficult or practically impossible to precisely foresee the changes in prices, as well as in the redistribution of increasingly production-decoupled support in agriculture.

In addition to the future volatility of prices, the level of prices after the accession will be affected by the opening of a still relatively closed market, the perception and propensity of domestic consumers for domestic products, as well as the changes in the structure of the market (concentration in trade) and possible strengthening of the competitiveness of domestic agriculture. The more domestic agriculture will be competitive and technologically and organisationally developed, the easier it will be for it to put up with the expected pressures. These pressures may even be smaller than foreseen, if domestic consumers remain faithful to their local market channels and products. However, the experience of the former EU accessions shows that market relations usually toughen more than it is expected.

Another uncertainty in the assessment of economic results of Croatian agriculture is related to the future agricultural budget. Although the budget has been determined with the financial envelopes for both pillars in the EU negotiations, it is still related to certain ambiguities. Croatia could face some difficulties not only in the implementation of measures but also in terms of co-financing of it from the national budget. Besides, there will be changes in the EU agricultural policy after 2014, although they have not yet been fully set out. They will most likely bring about even more production-decoupling of support and given the circumstances, also certain reduction in total agricultural budget, if measured in real terms.

Despite all limitations regarding the reliability of the simulations, we believe that the results of the analysis in this study are fairly realistic. They point to the direction of changes, which needs to be taken very seriously when planning and implementing the future policy. In aggregate terms, the revenues will remain at around the current level after the accession or even more probably slightly below it. The drop in revenues will stem from the drop in prices, as well as from smaller budgetary support in some sectors which are today relatively well protected and do not achieve the level of competitiveness as will be required after the accession. This is in particular the case in pig, milk, wine and tobacco sector. There are also products where no substantial changes are expected in revenues, and some products for which the simulation even predicts an increase in revenues after the accession (e.g. for maize). Livestock sector will be in a less favourable position than crop production, which will largely be a consequence of the very concept of the policy in the EU (abolishing of production coupled payments).

A considerable part of the negative effects of the accession will stem from the difference in budgetary measures in Croatia compared with the EU. It should be mentioned that in the base year used for the purpose of this analysis, there was still a relatively wide inconsistency of the budgetary policy in Croatia compared with the CAP and that after 2009 some reforms were launched in Croatia which brought about further harmonisation of measures; nevertheless, some differences will remain in place by the accession. Along with the fact that agricultural budget was relatively large, the measures in Croatia in the base year were still more production coupled and they were allocated to the products for which the support in the EU is either lower (e.g. milk) or even non-existent (pigs). Although the budget for agriculture will increase after the accession, it will also bring about many changes in direct payments. Therefore, the results on the aggregate level and in particular in some sectors are expected to be negative.

Considering all the above facts, the following most important recommendations can be made based on the results of the study:
- The focus of agricultural policy should be moved from the Pillar I direct payments to the Pillar II measures, as under these measures specific goals and priorities of the national policy can be formed more easily.
- Strategic plans need to be devised with the aim of assuring the most efficient possible use of still very generous EU funds for Croatia for the rural development policy. Attention should be given to defining and stronger positioning of the measures of the current Axis II, where it is possible to achieve, in line with the current EU legislation, strong income effects of this policy.
- Competitiveness of agriculture needs to be strengthened, in particular competitiveness of the critical sectors, by investment supports, taking due consideration of policy of technological development, as well as establishing stronger links between the academic community and the business sector, in particular by way of applied research.
- By pursuing a transparent policy and proactive communication with the target groups, it should be properly indicated to which direction the expected changes will go, so that the farmers will be able to prepare for the changes. Special attention should be given to the implementation

of the measures and development of extension and other expert services which will help establish an efficient system of support for implementing the agricultural policy measures after the accession.

- Work should be pursued on the economic analyses of situation, monitoring of measures and assessing the effects of changes (impact assessment) in agricultural policy. To this end, the necessary infrastructure needs to be established for collecting, processing and exchanging of data and human and institutional resources need to be additionally strengthened.

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