

INCOME AND WELFARE INDICATORS OF SLOVENIAN LIVESTOCK PRODUCTION IN VIEW OF FUTURE ACCESSION TO THE EU

S. Kavčič, E. Erjavec

Abstract

Slovenian livestock production is facing different agricultural policy and economic environment as is the case in EU. Despite modest reforms of national agricultural policy it is still incomparable with common market organisations of CAP. Different levels of market-price support for major livestock commodities is another aggravating circumstance for efficient adjustment. Therefore different policy measures have to be taken into account simultaneously for policy relevant analysis (income effects, welfare efficiency). Applying APAS-PAM agricultural sector model for Slovenian agriculture the most important income and welfare effects of Slovenian EU accession on producers, consumers and taxpayers as well as net welfare effects for baseline and three accession scenarios have been simulated. Results obtained show potential improvement of incomes in dairy farming and cattle fattening only for most optimistic accession scenario (complete adoption of Agenda 2000 CAP), while deterioration is foreseen in pig and poultry farming irrespective of accession conditions. Producer surplus indicates similar trends, while consumers are expected to be beneficiaries due to lower market-price support. Main part of producer income support burden will be transferred to taxpayers. Irrespective of accession scenario net welfare effects for pork and poultry are favourable, while opposite could happen in milk and beef sectors.

Keywords: livestock production, income, economic welfare, agricultural policy, modelling, Slovenia

Introduction

By the final decision of the Berlin Summit of EU leaders in March 1999 on the scope and contents of the CAP in the 2000-06 financial perspective, the EU

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Stane Kavčič, MSc, Emil Erjavec, Associate Professor - University of Ljubljana, Biotechnical Faculty, Department of Animal Science, Groblje 3, 1230 Domžale, Slovenia.

withdraws eligibility for compensation payments to the candidate countries. The reason should lay on the lower current price level as well as on the negative social and macroeconomic effects in candidate countries (European Commission, 1996). Higher prices are also expected to be a stimulus to the growth of agricultural production within the new members, and this could consequently contribute to serious additional budget pressures on CAP. The estimated costs of enlargement could be made mainly by the direct payments. They are estimated to be relatively high, which obviously alludes to the need for a thorough reform of the existing CAP or, at least, to a special status of the new candidates after accession (Tangermann and Josling, 1994; Baldwin et al, 1997). Therefore, it can be expected that the questions about compensation payments will be on the top of the political agenda in the negotiation process of the next enlargement of the EU.

There are some reports that Slovenian agriculture should be treated differently than the general picture of CEEC (Bojnc and Swinnen, 1997; European Commission, 1995). In difference with the other applicant countries, the producer prices are almost at the level of the EU and due to the natural and structural conditions, Slovenia is a net importer of food items with a smaller potential for production growth. In addition, the Slovenian agricultural policy framework (objectives and measures) is rather close to that of the CAP. In case of Slovenia, therefore, the enlargement should be less expensive for the EU, and the adjustment of the policy proposed in Agenda 2000 less dramatic than in case of other candidates. This question has only been discussed rather generally in literature and some detailed analysis of the impact of economic integration on Slovenian agriculture could be of a broader interest.

The objective of the paper is, therefore, to contribute to the discussion on the EU enlargement with the estimation of the possible income and welfare consequences for the livestock sector in Slovenia by the use of empirical tools. One of the main objectives of the paper is to determine the real financial and policy dimension of the "direct payments issue" for Slovenian livestock production. In this way, a hypothesis emphasising the substantial dependence of the livestock sector in Slovenia on the level of EU direct payments after the accession is going to be tested.

Methodology

In order to get some quantitative estimates of likely effects of different policy scenarios APAS and PAM models for Slovenian agriculture have been developed. The APAS is designed as econometric multi-commodity model, taking into account specific features of Slovenian agro-industry and recent policy changes. It is a partial equilibrium, dynamic, multi-market, synthetic,

policy oriented simulation model, suitable to conduct sensitivity analysis and in this simple way incorporates different policy scenarios. On the other hand PAM has been used for analysing income, protection and competitive issues of the same policy options. Some results of APAS simulation are directly incorporated in PAM calculations both at individual producer as well as aggregate level, relaxing static nature of the original PAM. Also PAM results are fed back in APAS to perform simplified welfare analysis. APAS and PAM spreadsheet model for Slovenian agriculture is prepared to cover a period until 2010. For validation purposes the historical simulation method was used, comparing results for the past. Originally the model was used to compare pure price effects of different EU accession policy scenarios, but it has also the ability to simulate technological progress, incentive policy measures and production quotas.

In the model, net income is calculated as:

$$NI = VP - SS + Sb - Tx - Am - Nj - Int - Dp$$

where: NI net income (per hectare or head); Dp paid (hired) labour; VP value of production (at incentive prices); Am depreciation; SS intermediate consumption ("variable costs"); Nj brents (accounted also for own land); Sb subsidies; Int interest (capital costs); Tx taxes.

Welfare effects are measured with producer and consumer surplus, taxpayers' and net welfare effects.

Table 1. - MULTIPLIERS AT DIFFERENT POLICY ANALYSIS LEVELS

Indicator (policy level)	Producer price	Direct payments	Structural payments
Income effects on the basis of incentive prices	1.0	0.9	0.6
Producer surplus (ΔPS) on the basis of incentive prices	1.0	0.9	0.6
Consumer surplus (ΔCS) on the basis of retail prices	1.0	0.0	0.0
Taxpayers' effects (ΔT) on the basis of agricultural policy' costs (market costs only)	1.0	0.9	1.0

Different multipliers, shown in table 1, have been used for policy analysis. Welfare equations used in the model are:

$$\begin{aligned} \Delta PS &= (P_{Mod} - P_w) * Q_{sw} + 2 (P_{Mod} - P_w) * (Q_{sd} - Q_{sw}) \\ \Delta CS &= -[(P_D - P_w) * Q_{DD} + 2 (P_D - P_w) * (Q_{DW} - Q_{DD})] \\ \Delta T &= -[(P_{Mod} - P_D) * Q_{SD} - (P_D - P_w) * (Q_{DD} - Q_{SD})] \\ \Delta NW &= \Delta PS + \Delta CS + \Delta T \end{aligned}$$

where: ΔPS change in producer surplus; P_w (reference) world price; ΔCS change in consumer surplus; Q_{sw} domestic production at world price (PL

scenario); ΔT tax-payers' effect; Q_{SD} actual domestic production (at model price); ΔNW change in net economic welfare; Q_{DD} domestic consumption (at producer price); P_{Mod} model price; QDW domestic consumption at world price (PL scenario); P_D (domestic) producer price.

Scenarios

To simulate possible EU accession effects, three basic questions of possible EU CAP adoption have been simulated: potential producer price level, eligibility to direct payments and structural support schemes with their impact on agricultural markets. Main features of investigated scenarios are presented in table 2.

Table 2. - DESCRIPTION OF INVESTIGATED POLICY SCENARIOS*

Denotation	Description (all scenarios include world price trends)
BS	Baseline scenario - continuation of current national agricultural policy (NAP)
PL	Complete price liberalisation - world price level
EU+ + +	Complete CAP adoption in accordance with Agenda 2000, higher producer price level, direct payments and whole package of structural payments
EU+ -0	Equal as EU+ + +, but without direct and only half structural payments
EU-0	Equal as EU+ -0, but lower producer price levels

*BS scenario serves for comparison, while PL scenario makes it possible to simulate welfare effects.

Results and discussion

Income and welfare model results are summarised in tables 3 to 5.

Table 3. - INCOME EFFECTS OF SLOVENIAN EU ACCESSION IN LIVESTOCK - PROJECTION FOR 2003 (PER HEAD OF COW AND BULL, PER 100 PIG FATTENERS AND 1000 BROILERS)

	BS 2003	EU + + +	EU+ -0	EU - -0
Milk (SIT/cow)	143894	149930	122549	92722
Beef (SIT/head)	37203	47026	21553	10069
Pork (SIT/100 fatteners)	112385	-4009	-44829	-142791
Poultry (SIT/1000 broilers)	6534	-23787	-25047	-41803

Table 4. PRODUCER AND CONSUMER SURPLUS AT AGGREGATE LEVEL - PROJECTION FOR 2003 (MIO SIT)

	Producer surplus				Consumer surplus			
	Milk	Beef	Pork	Poultry	Milk	Beef	Pork	Poultry
BS	14033	10837	7897	3973	-13640	-10283	-13258	-3657
EU+ + +	12821	10406	6819	2875	-11307	-6914	-11431	-2704
EU+ -0	11503	7036	6750	2859	-11307	-6914	-11431	-2704
EU-0	7196	4412	5079	1567	-7184	-4223	-8760	-1527

Table 5. TAXPAYERS' AND NET WELFARE EFFECTS AT AGGREGATE LEVEL - PROJECTION FOR 2003 (MIO SIT)

	Budget costs				Net welfare			
	Milk	Beef	Pork	Poultry	Milk	Beef	Pork	Poultry
BS	-4641	-3178	-318	-764	-4248	-2624	-5679	-448
EU+ + +	-7933	-10739	-1056	-532	-6419	-7248	-5668	-361
EU+ -0	-3970	-3320	-532	-452	-3774	-3199	-5213	-297
EU-0	-2809	-3190	-518	-178	-2796	-3001	-4199	-138

Incomes of producers are extremely sensitive to different economic environment. Dairy farming is more profitable under EU+ + + (income growth by 4%), while under EU-0 there is 36 % income reduction in comparison with BS. Relative effect is even more emphasised in beef sector, with improvement of income situation by 26% or deterioration by 73% for the same comparisons. The worst prospective is foreseen in poultry production, where high losses are expected independently of accession scenario. Producer price in this sector is close to world price, with no accompanying support or protection measures, and effect of possible feed price reduction almost completely exhausted already in BS. Intensive pig rearing at family farm level should not expect much better income situation than in poultry, taking into account comparable size of production. To summarise, income situation of cattle production could improve in the case of eligibility for direct payments (premiums per head), but dramatic income deterioration is expected in the case of incomplete CAP adoption in all sectors under investigation and independently of accession conditions especially in poultry and pork sectors.

Measures of economic welfare show that pork and poultry producers (each approx. 1 billion SIT), and despite higher income per dairy cow also dairy farmers (1.2 billion SIT) are losers even under EU+ + + scenario, the latest due to decrease in aggregate milk production in comparison with BS. Under other accession scenarios reduction in producer surplus is even higher - in dairy farming decrease could achieve as much as 7 billion SIT and in beef

production nearly 6.4 billion SIT. These negative effects of accession on producer side are almost completely compensated by consumers. Their losses for four markets, when summed up, are reduced for 8.5 billion SIT under EU + + + and EU+ -0, and for nearly 19 billion SIT under EU —0, but still remains at the level of 22 billion SIT also under EU —0.

Budget costs of CAP implementation (EU+ + +) for 4 investigated commodities are the highest in beef (nearly 11 billion SIT) and milk production (8 billion SIT), and for 4 commodities together approx. 20 billion SIT (in comparison with less than 9 billion SIT under BS). Other accession scenarios are less expensive, since costs of taxpayers at aggregate level are reduced (by 2.2 billion SIT under EU —0 comparable to BS). Net economic welfare as aggregate measure of individual policy option's economic efficiency is deteriorated due to increased budget costs under EU+ + + scenario (with dead-weight loss of nearly 20 billion SIT in comparison with 13 billion SIT under BS), but remains on the level of BS under EU+ —0 scenario and brings relatively small improvement (approx. 3 billion SIT) under EU- -0 scenario. Favourable net welfare effects are achievable only on the costs of producers (extreme income deterioration), while consumers benefit due to lower food prices irrespective of Slovenian EU accession conditions.

Conclusion

Results obtained show extreme sensitivity of Slovenian livestock production on accession conditions, related with importance of pre-accession period and negotiation process. Differences of accession effects between products are very distinctive, from almost neutral effects in milk and beef sector under EU+ + + to drastic deterioration in pork and poultry irrespective of accession scenario. In beef production the key question are direct payments. The future of meat production on pastures and grassland (beef, also lamb and goat) is dependent also on structural measures (foremost for less favoured areas), which could be of equal importance as direct payments (premiums per head). Measures of structural policy are even more important for milk production. In short term dairy sector is threatened also by likely negative impact of non-competitive dairy industry. In longer term dispersed production structure could leave even more negative effects than price adjustment (i.e. reduction), especially in milk sector operating under the environment of individual production quotas. Pork and poultry sectors will be in single European market confronted with very competitive and less protected conditions. Outlook for dispersed Slovenian family farms' production is not rewarding, and difficult fight for survival is expected also for relative well

organised large scale farm production, especially when taking into account European trends and requirements in the fields of ecology and animal welfare.

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POKAZATELJI PRIHODA I PODRŠKE SLOVENSKE STOČARSKE PROIZVODNJE S OBZIROM NA BUDUĆE PRISTUPANJE U EU

Sažetak

Slovenska stočarska proizvodnja okrenuta je drugačijoj poljoprivrednoj politici i ekonomskom okruženju od onog u EU.

Usprkos umjerenim reformama državne poljoprivredne politike ona je još uvijek neusporediva s organizacijama zajedničkog tržišta CAP. Drugačije razine zaštite tržišne cijene za važnije stočarske proizvode još je jedna otežavajuća okolnost za djelotvornu prilagodbu. Stoga treba istodobno uzeti u obzir razne mjere za odgovarajuću analizu (djelovanje prihoda, djelotvornost podrške). Primjenjujući model APAS-PAM u poljoprivrednom sektoru na slovensku poljoprivredu simulirani su najvažniji učinci prihoda i podrške pristupanja Slovenije u EU na proizvođače, potrošače, porezne obveznike kao i čisto djelovanje podrške za osnovni i tri scenarija pristupanja. Dobiveni rezultati pokazuju potencijalno poboljšanje prihoda u mljekarstvu i tovu goveda samo u najoptimističnijem scenariju (potpuno prihvaćanje CAP programa 2000) dok se predviđa pad u svinjogojstvu i peradarstvu bez obzira na uvjete pristupanja. Višak proizvođača upućuje na slične trendove, dok se od potrošača očekuje da budu glavni korisnici zbog niže zaštite tržišne cijene. Najveći dio tereta zaštite prihoda prenijet će se na porezne obveznike. Bez obzira na scenarij pristupanja čisti učinci podrške povoljni su za svinje i perad dok se suprotno može dogoditi u sektoru mlijeka i goveda.

Ključne riječi: prihod, ekonomska podrška, poljoprivredna politika, modeliranje, Slovenija.

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