

**Income situation of agricultural households in Slovenia after EU accession:
impacts of different direct payments policy options**

Maja Kožar, Stane Kavčič, Emil Erjavec
University of Ljubljana, Biotechnical Faculty, Zootechnical Department

Contact information: Groblje 3, SI-1230 Domžale, Slovenia; maja.kozar@bfro.uni-lj.si



*Paper prepared for presentation at the XIth International Congress of the EAAE
(European Association of Agricultural Economists),
'The Future of Rural Europe in the Global Agri-Food System',
Royal Veterinary and Agricultural University in Copenhagen, Denmark,
August 24-27, 2005*

Copyright 2005 by [Kožar, M., Kavčič, S. and Erjavec, E.]. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.



INCOME SITUATION OF AGRICULTURAL HOUSEHOLDS IN SLOVENIA AFTER EU ACCESSION: IMPACTS OF DIFFERENT DIRECT PAYMENTS POLICY OPTIONS

Abstract

Paper investigates income effects of different direct payments policy options after the accession of Slovenia to the EU by application of a static deterministic total income model for rural households in Slovenia (TIM). Model is based on actual income data of 120 agricultural households in Slovenia. With respect to pre-accession baseline situation and accession agreement, income situation of analyzed households is likely to improve under all analyzed policy scenarios. Estimated benefits are highest in case of standard direct payments scheme, followed by basic flat-rate area payment option (entirely decoupled). Model results reveal also that policy reform will have redistributive impacts in favour of agricultural households engaged in extensive agricultural production.

Key words: EU enlargement / CAP reform / total income / income impacts / Slovenia
JEL classification: Q12, Q18

Introduction

Accession process to the European Union (EU) has significantly changed the structure and scope of agricultural support in Slovenia (Rednak et al., 2003). Direct payments (DP) became the most important element of agricultural policy with significant impacts on income of rural households. The accession process coincided with reform process of Common agricultural policy (CAP) of the EU. CAP reform, agreed in Luxembourg in June 2003 (EU News..., 2003), in terms of DP implies a gradual decoupling of support from production. In order to prevent short-term redistribution effects, member states can use various alternatives to retain part of this support production-linked. Thus, Slovenia had been faced with the decision which DP policy option to implement in i) immediate post-accession period (2004-2006) and ii) in period, when the 2003 CAP reform provisions should be enforced (2005 to 2013, start depending on selected reform policy option and structural specificity of agriculture).

In the immediate post-accession period either standard DP scheme (actual CAP accepted for old member states for the period from 2000 to 2006), or “simplified” DP scheme (“Simplified area payment scheme” or “SAPS”), a production decoupled area payment, was an option for Slovenia (Treaty of Accession, 2003). Besides Malta, Slovenia was the only new member state to opt for standard DP option in the immediate post-accession period (Council Regulation..., 2003). As CAP reform DP policy new member states are obliged to implement “regional flat-rate payment” (based on regional reference quantities), with an option to retain certain elements of the standard CAP scheme, which is production-coupled (EU News..., 2003; Council Regulation..., 2003). Slovenia will implement this scheme by 1st January 2007 at the latest.

This paper presents a comparison of economic impacts of different post-accession DP policy options on the level of agricultural households in Slovenia. Estimates were obtained by application of static deterministic total income model for rural households in Slovenia TIM (model TIM), developed by Erjavec et al. (2002), Oblak (2002) and Kožar et al. (2003). Taking into consideration the existing diversity of structure of total income of agricultural households in Slovenia (Erjavec et al., 2002; Oblak, 2002), income effects are investigated also by different employment types (especially full-time farms) and income groups of households. Paper starts with a short description of analyzed data, model



and policy scenarios. Model results are presented for the whole sample, by employment types and by total income groups. Discussion chapter gives final conclusions based on model results.

Methodology: data, model and policy scenarios

The model is based on the survey data from 120 agricultural households, complemented by selected secondary data (Statistical yearbook, 2002; Rednak, 2003). Households were proportionally sampled from four strata, i.e. employment types: full-time agricultural households (full-time farms), part-time agricultural households (part-time farms), self-employed agricultural households and non-agricultural rural households. Furthermore they were sampled from four municipalities, which lie in two regions different in terms of general economic standard and significance of agricultural sector in their economic structure: Pomurje (less developed) and Gorenjska (more developed) region. From each region two municipalities were chosen, one located in less favoured area for agricultural production. From each municipality 30 households were randomly sampled. Further details on data collection, sampling procedure and sample features are described in Erjavec et al. (2002) and Oblak (2002).

Static deterministic total income model TIM enables rough estimations of incomes by different sources and estimation of labour allocation on household level. It operates as a system of four sub models for estimating yearly incomes by their source (income from agriculture, income from off-farm activities, income from self-employment activities and income from other sources) with additional sub model for estimating labour allocation. Basic model assumptions are following:

- Years 2001 and 2006 are considered as base year and as simulated post-accession year, respectively.
- Only policy changes in agricultural sector are considered. They are based on the accession agreements for Slovenia, which entail negotiated reference quantities, production quotas and negotiated funds committed for DP and rural development policies in year 2006 (Treaty of Accession, 2003; EU and enlargement, 2003).
- Prices of agricultural products in year 2006 are set according to the expert opinion on the expected decrease of overall price level (Kavčič and Erjavec, 2003) and are identical in all scenarios.
- Income impacts are considered in terms of real prices.
- Investigated households are assumed to have received the entire set and amount of CAP aids within their production limitations and natural conditions for agricultural production in base year 2001 and in year 2006.

Analyzed DP policy scenarios are in detail described in Table 1.



Table 1. Scenario description.

Scenario – long name	Scenario – short name	Short description
Base year scenario	2001	Estimate of base year (2001) income situation of sample households.
Standard DP scheme	EUo	Standard CAP scheme as agreed for the period 2000-2006; different types of area and headage DP
Simplified area payment scheme	SAPS	Decoupled area payment - entire utilized agricultural area (UAA) eligible. Value estimated: - 237 € per hectare (ha) of UAA.
Basic flat-rate area payment scheme	FLAT0	Regionalized decoupled flat-rate area payment, different for arable land (area under potato, vegetables and perennial crops excluded) and for permanent grassland. Values estimated: - 289 € per ha of arable land - 243 € per ha of permanent grassland.
Supplemented flat-rate area payment scheme	FLAT1	Regionalized decoupled flat-rate area payment, different for arable land (estimated 235 €/ha) and for permanent grassland (estimated 198 €/ha), supplemented by coupled standard DP scheme measures: 100% suckler cow premium and 40% of slaughter premium.

Source: EU and enlargement (2003), Rednak (2003), Statistical Yearbook (2002), Erjavec (2005)

Results

Aggregate income effects

With respect to the baseline situation, income situation of analyzed households is estimated to improve in case of all policy scenarios (Table 2.). Aggregate model results indicate that total income could on average increase by 3 to 7% and income from agriculture by 9 to 18% compared to base year 2001. In aggregate, standard DP policy scheme (EUo) is estimated as most income favourable, followed by basic flat-rate area payment option (FLAT0). Average total DP amount received by sample households is estimated to (almost) double, compared to base year 2001. Thus the inflow from direct payments could compensate the effects of the expected decrease of overall producer price level after the accession.



Table 2. Aggregate income effects of alternative DP schemes.

	Unit	2001	Scenario			
			EUo	SAPS	FLAT0	FLAT1
Budgetary support (BS)	1000 EUR	2.2	4.6	4.1	4.2	4.0
<i>Index 2001 = 100</i>	%	100	210.8	186.2	192.6	180.4
<i>Share of direct payments in BS</i>	%	77.4	69.7	65.7	66.8	64.6
<i>Share of LFA payments in BS</i>	%	14.9	16.3	18.4	17.8	19.0
<i>Share of environmental program payments in BS</i>	%	7.0	14.0	15.8	15.3	16.3
Income from agriculture (IA)	1000 EUR	7.4	8.7	8.1	8.2	8.0
<i>Index 2001 = 100</i>	%	100	117.5	110.2	112.1	108.5
<i>Share of BS in IA</i>	%	29.8	53.5	50.4	51.3	49.6
Total income / household (TI)	1000 EUR	19.8	21.1	20.5	20.7	20.4
<i>Index 2001 = 100</i>	%	100	106.5	103.8	104.5	103.2
<i>Share of IA in TI</i>	%	37.3	41.1	39.6	40.0	39.2
Average producer prices						
<i>Index 2001 = 100</i>	%	100	95.0	95.0	95.0	95.0
Average size of sample agr. households (2001):						
<i>UAA</i>	ha			11.3		
<i>Number of animals</i>	*LU			14.3		
<i>“Real” economic size, calculated from 2001 total gross margin from agriculture</i>	**rESU			10.6		

*LU - livestock units

**1 rESU - 1200 euros of total gross margin from agriculture

The main reason why the investigated households could benefit the most in case of EUo scenario could lie in specific structure and high intensity of their production, which both markedly differ from national average. Sample average in 2001 was 11.3 ha of UAA and 14.3 LU, whereas national average was according to SORS (2002) 5.3 ha of UAA and 5.7 LU in the same year. On average beef and milk production, favoured under standard DP scheme, contributed almost 50% of total value of agricultural production in base year 2001 (national average according to Rednak (2003) only 39% in the same year) and a half of the average total DP amount received by sample households (EUo scenario).

Income effects by employment types of agricultural households

Model results analyzed by employment types suggest that income situation is likely to improve after accession for all analyzed employment types compared to base year situation (Table 3.). Comparing different policy scenarios all types could benefit the most in case of adoption of EUo scenario, followed by FLAT0 policy option.

In absolute terms the income effects are estimated as most beneficial to full-time farms (all scenarios). In relative terms however, income impacts are higher on part-time farms and self-employed agricultural households (except in case of EUo scenario). This could be explained by specific production structure and higher production intensity of full-time farms. Milk production prevails in their production structure (it contributed around 40% of value of agricultural production in 2001). For milk sector we can expect a significant price decrease after the accession which could lead to income decreases. Additionally, due to high farming intensity full-time farms are on average assumed not eligible for environmental payments, which together with other rural development



payments most significantly improve post-accession income situation of production and more extensive types in terms of input use, especially part-time farms (Kořar et al., 2003).

In relative terms model results reveal a marked redistribution of DP funds to the households that are in terms of production and factor use less intensive (part-time farms). This could be induced by relatively higher share of beef production (contributed around third of value of agricultural production in 2001) compared to full-time farms and by their lower production intensity, enabling them to participate in rural development programs.

Table 3. Income effects of DP policy alternatives by employment types.

Employment type of agricultural households	Scenario	BS	IA	Share of BS in IA	TI	Share of IA in TI
		Index 2001 = 100 (1000 EUR)	Index 2001 = 100 (1000 EUR)	%	Index 2001 = 100 (1000 EUR)	%
Full-time	2001	100 (3.37)	100 (14.10)	23.9	100 (20.79)	67.8
	EUo	216.9	112.1	46.3	108.2	70.2
	SAPS	180.3	103.3	41.7	102.3	68.5
	FLAT0	191.1	105.9	43.2	104.0	69.0
	FLAT1	172.1	101.4	40.6	100.9	68.1
Part-time	2001	100 (1.78)	100 (5.26)	33.8	100 (18.14)	29.0
	EUo	238.6	129.6	62.2	108.6	34.6
	SAPS	211.6	120.4	59.3	105.9	33.0
	FLAT0	217.1	122.3	59.9	106.5	33.3
	FLAT1	208.9	119.5	59.0	105.7	32.8
Self-employed	2001	100 (3.17)	100 (10.31)	30.8	100 (26.19)	39.4
	EUo	172.8	111.7	47.6	104.6	42.0
	SAPS	163.5	108.8	46.2	103.5	41.4
	FLAT0	165.1	109.3	46.5	103.7	41.5
	FLAT1	158.6	107.3	45.5	102.9	41.0
Non-agricultural	2001	100 (0.31)	100 (-1.35)	/	100 (14.96)	/
	EUo	159.3	/	/	100.9	/
	SAPS	199.3	/	/	101.7	/
	FLAT0	198.3	/	/	101.7	/
	FLAT1	182.6	/	/	101.4	/
<i>Full-time:</i>	<i>n=31</i>		<i>UAA=17.8 ha</i>	<i>LU=26.7</i>		<i>rESU=17.9</i>
<i>Part-time:</i>	<i>n=47</i>		<i>UAA=9.8 ha</i>	<i>LU=12.0</i>		<i>rESU=8.2</i>
<i>Self-employed:</i>	<i>n= 22</i>		<i>UAA=14.3 ha</i>	<i>LU=14.4</i>		<i>rESU=14.0</i>
<i>Non-agricultural:</i>	<i>n= 20</i>		<i>UAA=1.8 ha</i>	<i>LU=0.5</i>		<i>rESU=0.9</i>

Legend (also for Table 4):

BS	Budgetary support
TI	Total income of an agricultural household
IA	Income from agriculture
1 rESU	1200 euros of total gross margin from agriculture
/	Not computable



Income effects by total income groups

Income situation of all groups (quintiles) of households, ranked by total income in year 2001, is likely to improve after the EU accession. In relative terms the income from agriculture and total income could most markedly increase for lower income groups, i.e. Q1 and Q2, whereas the relative increase for highest income group Q5 would be modest (in absolute figures this group, including production more intensive households, would benefit the most compared to other groups). Further analyses reveal reasons for modest income effects for group Q5. This result is probably due to specific production structure (high share of beef production; around 32% of value of agricultural production in year 2001) and higher intensity in terms of production and factor use. Again, effects of redistribution of DP funds to households more extensive in terms of production and ranked in lower income groups (Q1, Q2) are clearly evident.



Table 4. Income effects of DP policy alternatives by total income quintiles.

<i>Total income quintile (households ranked by TI in 2001)</i>	<i>Scenario</i>	<i>BS</i>	<i>IA</i>	<i>Share of BS in IA</i>	<i>TI</i>	<i>Share of IA in TI</i>
		<i>Index 2001 = 100 (1000 EUR)</i>	<i>Index 2001 = 100 (1000 EUR)</i>	<i>%</i>	<i>Index 2001 = 100 (1000 EUR)</i>	<i>%</i>
1st quintile (max. 10,946 EUR)	2001	100 (1.62)	100 (1.36)	119.1	100 (8.30)	16.4
	EUo	209.7	197.8	126.3	116.0	27.9
	SAPS	183.9	167.1	131.1	111.0	24.6
	FLAT0	193.0	178.0	129.2	112.8	25.8
	FLAT1	182.9	165.9	131.3	110.8	24.5
2nd quintile (10,946 – 14,896 EUR)	2001	100 (1.38)	100 (2.45)	56.2	100 (13.12)	18.7
	EUo	228.7	150.0	85.7	109.3	25.6
	SAPS	211.5	140.3	84.7	107.5	24.4
	FLAT0	220.6	145.4	85.2	108.5	25.0
	FLAT1	206.7	137.6	84.4	107.0	24.0
3rd quintile (14,896 – 19,782 EUR)	2001	100 (1.49)	100 (3.74)	39.9	100 (17.18)	21.8
	EUo	224.7	131.9	68.0	106.9	26.9
	SAPS	177.5	113.0	62.7	102.8	23.9
	FLAT0	185.7	116.3	63.7	103.6	24.5
	FLAT1	174.6	111.9	62.3	102.6	23.8
4th quintile (19,782 – 26,325 EUR)	2001	100 (2.47)	100 (10.03)	24.6	100 (22.29)	45.0
	EUo	232.9	117.0	49.0	107.7	48.9
	SAPS	206.5	110.6	46.0	104.8	47.5
	FLAT0	213.5	112.3	46.8	105.5	47.9
	FLAT1	198.3	108.5	45.0	103.8	47.0
5th quintile (more than 26,325 EUR)	2001	100 (4.04)	100 (19.26)	21.0	100 (37.98)	50.7
	EUo	186.4	105.2	37.2	102.6	52.0
	SAPS	169.3	101.6	34.9	100.8	51.1
	FLAT0	172.8	102.4	35.4	101.2	51.3
	FLAT1	161.7	100.0	33.9	100.0	50.7
<i>1st quintile:</i>	<i>n=24</i>	<i>UAA=7.9 ha</i>		<i>LU=7.6</i>		<i>rESU=5.1</i>
<i>2nd quintile:</i>	<i>n=24</i>	<i>UAA=7.7 ha</i>		<i>LU=8.2</i>		<i>rESU=5.0</i>
<i>3rd quintile:</i>	<i>n=24</i>	<i>UAA=7.9 ha</i>		<i>LU=10.9</i>		<i>rESU=6.9</i>
<i>4th quintile:</i>	<i>n=24</i>	<i>UAA=13.2 ha</i>		<i>LU=17.4</i>		<i>rESU=13.1</i>
<i>5th quintile:</i>	<i>n=24</i>	<i>UAA=19.9 ha</i>		<i>LU=27.6</i>		<i>rESU=22.7</i>

Discussion and conclusions

Post-accession income situation of analyzed agricultural households in Slovenia is estimated to improve in case of all DP policy scenarios on aggregate sample level, as well as considered by employment types and total income groups. Total income results suggest stabilizing effects of inflow from direct payments on expected drop of overall price level after the accession. Tables 2. to 4. reveal that sample agricultural households could benefit more from standard DP policy scheme than from simplified scheme (SAPS) in the immediate post-accession period (2004 to 2006). In case of CAP reform policy options (FLAT0, FLAT1) DP funds could reallocate to households less intensive in terms of production and factor use (part-time farms, lower income groups).

Reasons for redistribution could partially lie in sample characteristics. Sample households are on average, as already mentioned, production and factor more intensive compared to national average (SORS, 2002; Statistical yearbook, 2002). Additionally, sample households significantly differ in structure of production (higher share of milk and beef production) and land use (lower share of permanent grassland) from national average (sample average in 2001: permanent grassland represents 44% of total UAA, compared to national average 61% of total UAA in the same year). Redistribution effects, depicted also in Figure 1., are undoubtedly in line with main CAP reform objectives: decoupling of direct payments, production limitation and multifunctionality enhancement (EU News..., 2003). However, at the same time they could cause delicate structural and income pressures on households that are production and factor more intensive or have higher total income, i.e. full-time farms, highest income group. Full-time farms contributed almost a half to the total value of agricultural products of sample households in 2001 (similarly income group Q5).

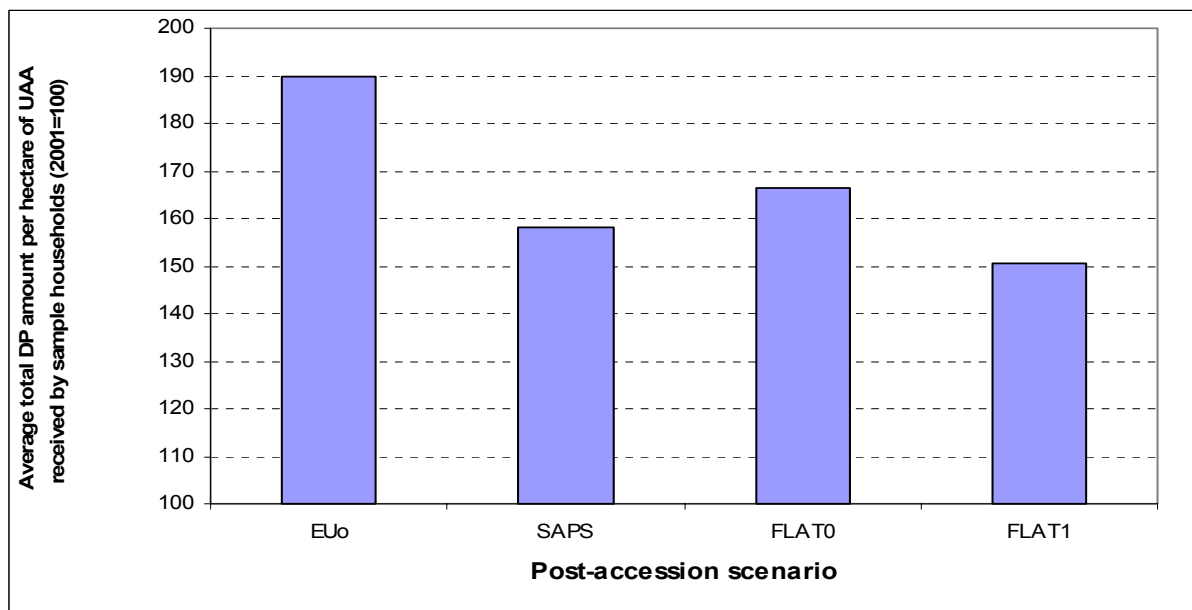


Figure 1. Direct payments per hectare of UAA received by sample households under different post-accession policy scenarios.

Considering its stronger income benefits compared to simplified (SAPS) scheme in terms of redistribution of DP funds, standard DP scheme proved to give more acceptable results for the majority of intensive farmers which at the same time represent an important part of farm interest groups. Considering also an additional fact that Slovenian government invested resources to establish a CAP-like DP scheme prior to the EU accession, it is understandable that standard DP scheme (Council Regulation..., 2003) was chosen for the immediate post-accession period.



In respect of CAP reform implementation, model results show that transition to flat-rate area payment options (FLAT0 or FLAT1) could be riskful in terms of redistribution of DP funds. A direct switch to basic flat-rate area payment option immediately after the accession would therefore theoretically be the most preferable solution (Erjavec, 2005). Considering that Slovenia implemented CAP oriented DP policy prior to EU accession, the switch would deteriorate income situation of the vital portion of agricultural households (intensive, prevailing beef and milk production). At time of submitting the paper, final decision of Slovenia on CAP reform DP policy scheme was not made yet. However, different supplemented flat-rate area payment schemes were analyzed to design the one that would enable the smoothest switch to CAP reform conditions.

Comparison of model results illustrates some general directions of possible impacts of analyzed DP policy options on income situation of sample agricultural households. However, results should be taken with some degree of precaution. Model TIM is recommended to be upgraded in a way to enable modelling of non-agricultural income activities of agricultural households and modelling of additional aspects of DP policy options (Erjavec, 2005). Further, database representativeness could be improved. In this respect application of other relevant Slovenian databases, especially IACS database should be taken into consideration.

Finally, different DP policy option should be tested also by applying other empirical tools, which allow a deeper insight into agricultural sector and a more detailed evaluation of other economic effects, especially in the sense of production and structural effects, for example mathematical programming models (Howitt, 1995; Röhm and Dabbert, 2003; Sinabell and Schmid, 2003).



References

- Council Regulation (EC) No 1782/2003. (2003). Official journal of the European Union L 270: 1-69.
- Erjavec, E. (2005). EU accession effects and challenges for agriculture and agricultural policy in Slovenia = Die EU-Beitrittseffekte und die Herausforderungen für Agrarsektor und Agrarpolitik Sloweniens. In Pistrich, K. and Hofreither, M. F. (eds.), *Jahrbuch der Österreichischen Gesellschaft für Agrarökonomie*. Band 13. Wien: Facultas, 1-18.
- Erjavec, E., Juvančič, L., Oblak, O., Kožar, M., Moljk, B., Kolarek, P. and Kavčič, S. (2002). Economic diversification and labour adjustment in the rural households in Slovenia. Working paper for Project EC-PHARE ACE No. P98-1090-R. Domžale: University of Ljubljana, Biotechnical Faculty, Chair for agricultural economics, policy and law, 83 p.
- EU and enlargement. (2003). *Agra Focus* 83: 1-8.
- EU News – CAP reform. (2003). *Agra Focus* 89: 1-27.
- Howitt R. E. (1995). Positive mathematical programming. *American Journal of Agricultural Economics* 77: 329-342.
- Kavčič, S. and Erjavec, E. (2003). Projection of agricultural incomes in Slovenia after EU accession. In Kavčič, S., Erjavec, E. and Kuhar, A. (eds.), *Slovensko kmetijstvo in Evropska unija*. 1. ed. Ljubljana: Slovenian Society of Agricultural Economists – DAES, 37-52.
- Kožar, M., Kavčič, S. and Erjavec, E. (2003). Effects of Slovenian accession to the EU for Slovenian agriculture. In Kavčič, S., Erjavec, E. and Kuhar, A. (eds.), *Slovensko kmetijstvo in Evropska unija*. 1. ed. Ljubljana: Slovenian Society of Agricultural Economists – DAES, 289-303.
- Oblak, O. (2002). An estimate of total income on agricultural households in Slovenia. M. Sc. Thesis. Ljubljana: University of Ljubljana, Biotechnical faculty, Department of agronomy, 110 p.
- Rednak, M. (2003). A development of agricultural policy information systems in Slovenia. Doctoral Thesis. Maribor: University of Maribor, Faculty of agriculture, 191 p.
- Rednak, M., Volk, T. and Erjavec, E. (2003). Der Transformationsprozess und die EU-Beitrittsanpassungen in der slowenischen Landwirtschaft. *Berichte über Landwirtschaft* 81: 614-636.
- Röhm O. and Dabbert S. (2003). Integrating agri-environmental programs into regional production models: an extension of positive mathematical programming. *American Journal of Agricultural Economics* 85: 254-265.
- Sinabell, F. and Schmid, E. (2003). Entkopplung der Direktzahlungen. Konsequenzen für Österreichs Landwirtschaft. Wien: Österreichisches Institut für Wirtschaftsforschung, 65 p.
- SORS. (2002). *Agricultural Census 2000. Research results*, No.777. Ljubljana: Statistical Office of the Republic of Slovenia, 256 p.
- Statistical yearbook. (2002). *Agriculture and fishing*. Ljubljana: Statistical Office of the Republic of Slovenia, 286-304.
- Treaty of Accession. Treaty. (2003). Official journal of the European Union L 236: 17-31.