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CONTENT

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ECONOMIC EFFECTS OF TRITICALE PRODUCTION ON ACID SOILS[1]

Milan Biberdžić, Goran Maksimović, Saša Barać[2], Zoran Jovović[3]

Summary

Triticale production on acid soils requires significant investments in repairing bad qualities of those soils and it raises the question about the profitability of triticale growing.

The aim of our study was to determine the yield of triticale on acid soil depending on the dose and type of applied fertilizer, as well as economic feasibility of the application of fertilizers in the production of triticale on the acid soils. The experiment was performed at the Centre for Agricultural and Technological Research in Zaječar, during 2009-10 years. It was a set-by-bloc system with three repetition and included the control of three variants of fertilization, which were included in mineral (variant I and II) and a combination of mineral, lime and organic fertilizers (variant III). The survey results show a significant effect of fertilizers on grain yield increase of triticale, especially the combination of mineral, lime and organic fertilizers. The highest value of production, as well as the largest variable costs, is recorded in the III variant of fertilization. The highest profit was gained in the II variant of fertilizer. The most favourable indicators' values of economic efficiency (productivity, efficiency and profitability) were recorded in II variant of fertilization. The most economical is to organize the triticale production on acid soils using the fertilizers with the increased dose of phosphorous (II variant).

Kew words: *triticale, system of fertilization, yield, calculations, economic effects.*

JEL: *Q10, Q14*

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Introduction

According to many researches, the triticale is a plant species with a high genetic potential for yield and favourable nutritive values so that's why it is considered a promising plant species (Borojević, 1981, Cvetkov, 1982, Đokić, 1988).

According to the results of Impiglia (1987), triticale has modest requirements in relation to wheat and greater adaptability on acid soils, as well as greater resistance to the usual diseases. Vertisols are soils of bad water-aerial and physical-mechanical properties.

On such soils manufacturing of plants is unstable. According to the quotes of Aniola and Madeja (1996), the highest tolerance to acid soils exhibit rye, then triticale and wheat, while barley is the most sensitive. Numerous studies, both within our country or over the world, show that appropriate application of lime fertilizers in combination with organic and mineral is the most effective way to eliminate unfavourable production characteristics of acid soils and affect multiple increases in yield (Jovanović et al., 2006, Kovačević et al., 2006, Jelić et al., 2006).

In order to improve the acid soil the greater investments are indispensable and thereby production of wheat on such soils is more expensive. Due to the high price of mineral and organic fertilizers, on the one hand, and the low purchase price of wheat, on the other hand, the question is raised about the profitability of growing wheat. Ivanović Lana and collaborators (2010) point out that for the analysis of the agricultural farm must be developed a programme based on the calculations of variable costs. Analysis of the variable costs of production can serve as a basis for economic analysis in order that with less costs, to be provided profitable and quality production (Subić et al., 2010, Munćan et al., 2010, Bošnjak, Rodić, 2010).

The aim of our study was to determine the yield of triticale on the acid soil depending on dose and type of applied fertilizer, as well as economic feasibility of the application of fertilizers in production of triticale on acid soils.

Material and methods

The experiment was carried out at the Centre for Agricultural and Technological Research in Zaječar, during 2009-10 years. It was set-by-bloc system in three repetition and included the control of the three variants of fertilization, which were included in mineral -NPK (variants I and II) and a combination of mineral, lime ($CaCO_3$) and organic fertilizer (manure), variant III (Tab 1).

In the experiment was included a sort of triticale by name of Tango. Analysing the overall variable costs and value of triticale production there was performed calculations of production and elements of economic efficiency (productivity, efficiency and profitability) for all three variants of fertilization. Cover of the variable costs of production per hectare was done according to the formula:

CVC = Q – VC, when is Q = (qxc)

CVC - cover of variable costs,
Q - value of production,
VC - variable costs,
Q = quantity of products,
c - price of the product per unit of measure,

Calculation based on variable costs can be used to compare production when the investments are different.

The results of studies with discussion

The grain yield of triticale

Fertilization has shown a significant effect on grain yield of triticale (Tab 1). The yield on all variants of fertilization was higher compared to control variant. The highest yield (4053 kg ha^{-1}) was achieved in the variant III where a NPK combination was applied, lime and organic fertilizer. The yield in variants II and III was approximately equal. Variant with increased dose of phosphorous (II) showed good results in increase of yield. Also pronounced effect of NPK application with higher content of phosphorous is the result of high soil acidity and low content of available phosphorous in the soil. Positive effects of increased doses of phosphorous fertilizers on the yield level of wheat grain previously were obtained by other authors (Jelić et al., 1998, Jovanović et al., 2006, Kovačević et al., 2006).

Numerous previous studies have shown that in soils of acid reaction the full use of NPK, lime fertilizer and manure have a high effect on grain yield (Ognjanović et al., 1994, Jelić et al., 1995, Jelić et al., 2004), with which and our results are consistent.

Table 1. Grain yield of triticale depending on fertilization

Fertilization variants	Amounts of nutrients - (kg ha^{-1})					Grain yield (kg ha^{-1})
	N	P_2O_5	K_2O	$CaCO_3$	Manure	
0. Control	0	0	0	0	0	1.927
I. NP_1K	120	80	53	0	0	3.550
II. NP_2K	120	160	53	0	0	4.020
III. NP_1K+CaO_3 + manure	120	80	53	5.000	20.000	4.053

The compilation of calculations according to variable costs is based on determining the value of production on one hectare. Production value is obtained by multiplying the quantity of the product and its market price. From the production values are subtracted variable costs and the financial result or profit is obtained. In the production of triticale variable costs are included: the cost of materials (seeds, fertilizers and protective equipment), the cost of the plant machines and manpower. Since in our research work we're dealing with three various variants of fertilization, for each of them we've made a special calculation (Table 2, Table 3 and Table 4).

Table 2. Calculation of triticale production at I variant of fertilization

No	Elements of calculation	UM	Quantity	Price	Total	Structure of costs %
a)	Value of production				69225	
	Mercantile grain	kg	3.550	19.5	69225	
b)	Material (1+2+3)				25212	62.66
1.	Seeds	kg	300	39	11700	29.08
2.	Mineral fertilizers					
	NP1K	kg	253	45.5	11512	28.61
3.	Protective equipment	1	2,5	800	2000	4.97
c)	Services of the plant machines and worker's labour (4+5+6)				15020	37.34
4.	Tractors				7000	17.40
5.	Harvesters				5000	12.42
6.	Manpower	h	20	151	3020	7.52
d)	Overall variable costs (b+c)				40232	
e)	Belonging part of general costs				2012	
f)	Overall costs (d+e)				42244	
g)	Profit (a-f)				26981	

Table 3. Calculation of triticale production at II variant of fertilization

No	Elements of calculation	UM	Quantity	Price	Total	Structure of costs %
a)	Value of production				78390	
	Mercantile grain	kg	4020	19.5	78390	
b)	Material (1+2+3)				28852	65.31
1.	Seeds	kg	300	39	11700	26.49
2.	Mineral fertilizers					
	NP2K	kg	333	45.5	15152	34.30
3.	Protective equipment	1	2,5	800	2000	4.52
c)	Services of the plant machines and worker's labour (4+5+6)				15322	34.68
4.	Tractors				7000	15.85
5.	Harvesters				5000	11.32
6.	Manpower	h	22	151	3322	7.51
d)	Overall variable costs (b+c)				44174	
e)	Belonging part of general costs				2209	
f)	Overall costs (d+e)				46383	
g)	Profit (a-f)				32007	

Table 4. Calculation of triticale production at III variant of fertilization

No	Elements of calculation	UM	Quantity	Price	Total	Structure of costs %
a)	Value of production				79034	
	Mercantile grain	kg	4053	19.5	79034	
b)	Material (1+2+3)				56012	76.16
1.	Seeds	kg	300	39	11700	15.91
2.	Mineral fertilizers					
	NP1K	kg	253	45,5	11512	15.65
	Protective equipment	kg	5000	2,16	10800	14.68
	Services of the plant machines and worker's labour (4+5+6)	kg	20000	1	20000	27.20
3.	Tractors	1	2,5	800	2000	2.72
c)	Harvesters				17530	23.84
4.	Manpower				8000	10.88
5.	Overall variable costs (b+c)				5000	6.80
6.	Belonging part of general costs	h	30	151	4530	6.16
d)	Overall costs (d+e)				73542	
e)	Profit (a-f)				3677	
f)	Value of production				77219	
g)	Mercantile grain				1815	

Triticale production value grew from I to III variants of fertilization, which is caused by the application of large quantities and types of fertilizers, thus increasing the yield. However, when it comes to total profit it's obvious that it grew from I to II variants of fertilization, and at III variants of fertilization the profit is the lowest. This is due to the increased costs of fertilizers and manpower at III variant.

Most of the variable costs belong to material costs and they were ranging from 62.66 % (I variant of fertilization) to 76.16 % (III variant of fertilization). Most of the cost of materials belonged to the costs of seeds and fertilizers. Costs of fertilizer varied depending on type and quantity, so the lowest were at I variant (28.61 %) and the highest at III variant of fertilization (57.53 %). In the studies of Todorović, Filipović (2009) is highlighted a significant share of the costs of fertilizers in the production of wheat (35.75 %). The rest of variable costs included the costs of plant machines and manpower, so that they were ranged from 23.84 % (III variant of fertilization) to 37.34 % (I variant of fertilization). Our results are similar to the results of Ivanović et al. (2010) which talk about the cover of the variable production costs of wheat in Serbia.

Variable costs per hectare were the lowest at I variant of fertilization, and the highest at III variant, which is understandable considering the quantities and prices of the applied fertilizers. The results of Todorović, Filipović (2009) also indicate that increasing of yield with the increased mineral nutrition causes increase of the variable production costs. They emphasis the great importance of fertilizers in increasing the profitability of wheat production.

Labour costs are calculated based on the spent working hours of the effective work and real market prices. However, to gain a fuller picture of profitability estimation, it is indispensable to consider other indicators of success. Relying on the obtained results in calculations it is possible to express the basic indicators of the degree of economic efficiency (productivity, efficiency and profitability).

Based on these micro-economic indicators was performed a comparison of triticale yield results for all three variants of fertilization. Method of natural expression of labour productivity shows quantum of products gained in time unit of measure.

Table 5. Productivity of production

No.	Elements	Variants of fertilization		
		I	II	III
1.	Quantity of obtained product	3550	4020	4053
2.	Total labour hours spent by h	20	22	30
3.	Labour productivity (kg/h) 1/2	177.5	182.7	135.1

The highest labour productivity (182.7) was achieved in II variant and the lowest (135.1) in III variant. This is expected due to the fact that for the variant III should be spent more hours at work than in other variants. By comparing the realized values of production and the incurred costs we provide valuable expression of production efficiency which is shown in Table 6.

Table 6. Production efficiency

No.	Elements	Variants of fertilization		
		I	II	III
1.	Value of production (din/h)	69225	78390	79034
2.	Costs of production (din/h)	42244	46383	77219
3.	Coefficient of efficiency 1/2	1.64	1.69	1.02

The coefficient of efficiency shows that at 1 dinar of investment funding is obtained from 1.02 to 1.69 dinars of production value, depending on the variant of fertilization. This tells us that the production of triticale was effective, especially at the II variant of fertilization. Results of Vukoje et al. (2011) show a higher rate of efficiency (2.24) in the production of spelt u in terms of organic production. The rate of profitability represents the ratio of the realized financial results and the value of production, as is presented in Table 7.

Table 7. Rate of production profitability

No.	Elements	Variants of fertilization		
		I	II	III
1.	Financial results (din/h)	26981	32007	1815
2.	Value of production	69225	78390	79034
3.	Rate of profitability 1/2 x100	38.98	40.83	2.30

Production of triticale, at all three variants of fertilization, has been profitable, as evidenced by the rate of profitability that ranged from 2.30 % to 40.83 %. The highest profitability was at II variant of fertilization, and the lowest (2.30 %) at III variant. Such a low rate of profitability is a low financial result realized at III variant of fertilization. The most favourable values of the indicator of economic efficiency are recorded at II variant of fertilization, and thus it can be regarded as the most profitable and the most efficient, no matter that the yield and production values were the highest at III variant of fertilization. When it comes to acid soils, their improvement and high yields you should not always be guided by the highest yield, because it's not often the most profitable, as demonstrated by our research. In view of the high cost of fertilizers, which significantly increase the cost of production, it is indispensable to choose the rational quantities of fertilizers that will be used to achieve satisfactory yield and the production to be the most profitable.

Conclusion

On the basis of stydying the influence of fertilization on triticale grain yield and its economic feasibility when applied to acid siols, can be concluded the following:

- Application of fertiliziers positively affected on increase of triticale grain yield.
- The highest yield was obtained by applying a combination of NPK, lime and organic (manure) fertilizier (variant III).
- In order to raise the fertility level of acid siols and increase the yield of cultivated plants, it is necessary to use a combination of NPK, lime and organic fertliziers, as well as application of NPK fertliziers with increased dose of phosphorous.
- The highest production value was recorded in III variant of fertilization.
- The highest variable costs were at III variant of fertilization.
- Costs of fertiliziers and seeds, in the production of triticale, represent most of the variable costs.
- The highest profit was gained at II variant of fertilization.
- The most favourable values of the indicator of economic efficiency (productivity, efficiency and profitability) were recorded at II variant of fertilization.
- The triticale production on acid soils is the most economical to organize using mineral fertiliziers with increased dose of phosphorous (II variant).

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EKONOMSKI EFEKTI PROIZVODNJE TRITIKALEA NA KISELIM ZEMLJIŠTIMA

Milan Biberdžić, Goran Maksimović, Saša Barać[4], Zoran Jovović[5]

Rezime

Proizvodnja tritikalea na kiselim zemljištima iziskuje znatna ulaganja u popravku loših osobina tih zemljišta pa se postavlja pitanje isplativosti gajenja tritikalea.

Cilj naših istraživanja je bio da se utvrdi prinos tritikalea na kiselom zemljištu u zavisnosti od doza i vrste primenjenog đubriva, kao i ekonomska opravdanost primene đubriva u proizvodnji tritikalea na kiselim zemljištima. Ogled je izvedena u Centru za poljoprivredna i tehnološka istraživanja u Zaječaru, tokom 2009-10 godine. Postavljen je po blok sistemu u tri ponavljanja i obuhvatao je kontrolu i tri varijante đubrenja, gde su bila uključena mineralna (varijanta I i II) i kombinacija mineralnih, krečnih i organskih đubriva (varijanta III). Rezultati istraživanja pokazuju značajan uticaj đubriva na povećanje prinosa zrna tritikalea, posebno kombinacija mineralnih, krečnih i organskih đubriva. Najveća vrednost proizvodnje, kao i najveći varijabilni troškovi, zabeleženi su kod III varijante đubrenja. Najveća dobit ostvarena je kod II varijante đubriva. Najpovoljnije vrednosti indikatora ekonomske efikasnosti (produktivnost, ekonomičnost i rentabilnost) zabeleženi su kod II varijante đubrenja. Proizvodnju tritikalea na kiselim zemljištima najekonomičnije je organizovati uz upotrebu mineralnih đubriva sa povećanom dozom fosfora (II varijanta).

Ključne reči: *tritikale, sistem đubrenja, prinos, kalkulacije, ekonomski efekti.*

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AN AGRICULTURAL PRODUCTION AS A SIGNFICANT AREA OF A STRATEGY OF ECONOMY DIPLOMACY OF SERBIA

***Slobodan Nešković*[1]**

Summary

Contemporary trends and objective circumstances in the global level condition a need for changes and adaptation of social and political systems, so as human abilities would be used in an optimal way. Economy diplomacy as the main aim of its functioning positions an international approach in promotion of all positive values of a country, where affirmation of our agricultural products represents an essential possibility and chance in the world market. Cuurent international challenges implicate the essential position of a man and having made a personality of a business diplomat, capable to implement reforms in all levels of management. The contemporary world is being faced with huge issues in securing production of enough quantities of healthy safe food, especially of animal origin. A number of factors directly, but also indirectly, endanger the health of people through food. Vet management of livestock health and production related to the increase of milk industry and public is to improve two areas in the livestock production, and these are safety of food and animals' benefit. A strategic approach of the Republic of Serbia involves all relevant subjects of the country, especially economy diplomats who represent and affirm Serbian national, and production resources, firstly.

Key words: *economy diplomacy, agricultural production, safety of food, strategy, Republic of Serbia*

JEL: *Q12, Q13*

Introduction

The economy diplomacy secures progress of social subjects in all economy works and works out of it. "Economy diplomacy represents a specific sophisticated connection of diplomacy in a classical sense, ecnomy sciencies and management ones, methods and negotiation techniques with foreign partners, public relations and collection of economy information of the interest for the ecnomy of a country, or a company, in the aim of break through to the world market".[2] In a process of strengthening of the economic role of an

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2 Prvulović, V. (2010): *Economy diplomacy*, Belgrade, Megatrend University, pp.19.

undeveloped or backward country, there is a special place of practice of encouragement and support of domestic business subjects to enbroad the market and increase capital, being related to the agriculture subjects, either.

The increase of influence of para-state business systems onto the country is being a characteristic in the transition from communism to capitalism, being suitable to a syntagm of business diplomacy of para-state companies but not in a positive sense, but it can be normal for a country to take care of its huge business systems, especially of those that cross a border and appear in the international market. When the interests of a private capital and the country close to one another, the business and spreading of companies is being stimulated by the country itself, and this is a frequent practice in the countries where the economy is a primary one. The economy diplomacy in the agriculture starts from diplomacy and accomplishes top results in the agricultural production of a country.

The economy diplomacy means vitality, flexibility and reproduction of capital. A businessman creates, maintains and protects, but the country has the interest to support this in the highest level, especially when domestic capital from this area is being invested into abroad. It means that diplomatic relations of a country understand more content and formal contacts of the state with big capital owners, especially with those who invest their capital out of the country. The support is different: legal one, contacts, information, communicational, financial, guaranteed one. The economy diplomacy takes care on profit, but also performs complex processes of business diplomacy.

Economy Diplomacy and Agricultural Production

The economy diplomacy or bodies and representatives of a country include a diplomatic activity of big companies, among the other areas of agriculture, that introduce the business diplomacy of bodies and representatives of the state with the market, business and development of its great business systems of the interest for the national economy. It sublimes complex activities in the economy sphere, where it connects and makes closer economic interests of companies and diplomatic aims of a state, with the usage of the available diplomacy methods and economic resources.[3] A value system of an economy diplomat influences onto the structure of personality of the one and it is clear to change depending on concrete conditions. The organisation (a state or company) and even the one influence onto the value orientation of the economy diplomat. Even with no influence of the state and company, the business diplomat changes depending on the set aims that the one accomplishes, and the interests, either.

The economy diplomat should perform business successfully, functions, tasks and assignments, and this means to have an appropriate and strong personality and an optimal political, economical, theoretical and religious orientation. The role of the one is extremely significant when it is under the issue on making closer the interests of the company from

3 Орнатски. И. А. (1985): *Економическаја дипломатија*, Москва, Международние Отношениа, стр. 9.

the area of agro complex and diplomatic aims of the state. Since the agricultural production has a significant influence onto the economy of the country, in the conditions of the entire agricultural production, livestock is a leading branch of it. In developed countries of Europe, as Denmark and Holland, beef production participates with 60-70 % in the entire agricultural production. In our country, beef production participates with around 33% in the entire agricultural production.

The international trade of diary products has been considered less significant since suffice of the products, but this view is being changed. A fast increase of a number of countries with less production of milk, confirms the countries exporters in a conviction that the international trade is a good business. The increase and direction of the global milk trade depend on a variance between domestic production of milk and reduction of production in certain countries, and also the level the variance is being changed. The increase of options in the international trade of milk is obvious in the example of New Zealand, and it clearly emphases the development direction of this trade. In EU countries, USA, Canada, Australia and New Zealand, a technology advance in all production areas has been the fastest, and thus it has brought signficiant changes in the milk production.

The participation of the world milk production in the entire world trade fell for 7 percentages (it is now 10%) in 2004, and comparing it with other participation of the farm products, such as wheat, coffee, soya or banana, it is 30 to 40 percentages. The improvement of cooling and transportation technologies has made milk trade more practical, compared to previous years, although a high price is a permanent limitation. Almost each country produces enough milk for local spending, but the production price depends from factors such as labour price, genetic potentials, farm technology and available quantities of food and water for animals. Thanks to low production costs, and also a comparatively smaller population, the countries with the excess of milk become huge producers of milk in the world level, as New Zealand is.

Switzerland, Norway and Japan are countries with high costs of milk production since they do not have enough soil fields for production of bush plants. Poland with its wealth of soil fields for food production and low wages, secures the best conditions for milk production compared to all European countries. Regarding costs, Canada and countries of the European Community are in the middle of the level, while the USA has changed the structure of milk production, are trying to reach the leaders in low cost production. It would be logical that milk trade performs from the regions with low to the regions with high production prices. In formation of demand and trade flows, differences in products and consumers' demands have a significant place. The countries of high living standard, including big milk producers, as it is New Zealand, import cheese from the EU countries. A huge trade route is also cheese selling from EU to the USA. The most developed countries of Europe, regarding development of agricultural production, are Holland and Denmark, and they accomplish more than 70 % of the entire agricultural income from livestock. The economists claim that underdeveloped countries are those whose income from livestock brings less than 50% of the entire production income. Our country is somewhere in the border, since livestock part in the entire agricultural production is around 55%.

A construction of economy-diplomatic model of each country in the agricultural area represents a multilayer challenge, and thus for Serbia, and the one is not a short-term, therefore it is necessary to have in mind the following:

1) Economy-diplomatic activity of each country is based on a complete expression and accomplishment of priority national economic interests;
2) Together with strengthening of the role of economy diplomacy in foreign-economy activities of the country, it is necessary to strengthen its scientific, educational and professional base;
3) Having in mind the interests of different hierocratic, economical and political groups, a try of vulgarisation of the very term, role and aims of economy diplomacy is an expected one;
4) The economic diplomats must be persons selected on the base of their professional knowledge and abilities being directly related to international business and international economic relations;
5) For the functioning of a new economy-diplomat system of our country, it is of special significance securing of needed financial resources, infrastructure and appropriate organisational design, where the solutions of the most successful economy-diplomatic models in the world are to be used.

The economic occasions in the last few years were completely justified the orientation of our economy. The strategy has been defined as extremely export one and numerous challenges stand before beef production in our country. The entire foreign trade balance is positive, and unit production is a low one, and it tells us that products of low value are numerous in this (raw and half-processed one). There has been a fall in physical scope of production, and the part of agriculture in GDP in foreign-trade is approximately 30%. These emphases that Serbia has a challenging potential, and it has not been realised in an apocopate degree, since there is no developed export strategy and developed systems of stimulation measures especially related to livestock. Serbia is in a process of euro integration, where a mutual agricultural policy is ahead. The European Union has contributed with its mutual policy to a higher cooperation of member countries, in all segments of agricultural production.[4]

The EU markets (53,8% export, 45% import in 2005), are of great significance to us, but also of a special significance the region markets of free trade of south-east Europe (44% of the entire export in 2005), and the market of Russian Federation having an agreement on free trade. From livestock products being the most dominant one in exporting are half-processed meat and fresh and cooled meat. The export is now being directed towards live bullock and its meat, live sheep and sheep meat and their final products. A flexible export quota for 2005 for bullock meat was determined by EU to 9.985 t.

4 Cvijanović, D., Simonović, Z., Mihailović, B. (2011): *Focus and Objectives of the Recent Reforms of CAP EU Regional Policy*, Economics of Agriculture, Vol. 58, no. 3, IAE Belgrade, pp. 360.

Serbia has 5, 7 million ha of agricultural soil, 4, 2 million ha is cultivating one, and 87% is in private possession. All inhabitants do agriculture in some way, but only 30% as their basic work. Demographic variables in our rural areas are very negative. The number of villages is getting smaller fast and in 68, 8 % there is a fall in number of inhabitants, and the average old age is getting higher. 700 000 of household do production and have around 3 ha in the average in their possession. Still, 44% of the entire a number of inhabitants live in villages in Serbia. Beef production is the main branch of livestock breeding in Serbia, and pursuant to the official list from 2002, there were 776 755 of bullock. The production of cow milk per milking cow is negative and very low, and the average is 2585 liters, and this is less than the world average for 50%. Pursuant to the data of RSZ, in the beginning of 2010, 586 000 cows were recorded and bullock, and this represented a reduced figure compared to 2008 for 6, 3% i.e. the figure was smaller than the average from 2000-2008 for 18, 9%.

In type content, Simmental is a dominant one; there is a high percentage of Mestizos, while Holstein type is slightly above 10%. In 2009, production of cow milk was 1 515 million of litres, and there is a several years stagnation in it, and regarding of all this, a higher productivity (milk per a cow) has been gained in the conditions of a reduced number of cows. It was calculated that the production of 206 litres was accomplished per an inhabitant in 2009. The realized production of cow milk in 2009 was smaller for 1, 2 % compared to the average in the previous 2008, and it was smaller compared to the average from 2000-2008 for 3, 6%. The entire period of 2000 was characterised by a smaller number of cows and bullocks and also a stagnation of production of cow milk.[5] In Serbia, there are still around 80 000 of households that bring less than 10 litres of milk a day, and 35 000 bring 10 to 30 litres. In these conditions, the production is unprofitable. The climate conditions for bullock breeding are suitable and divided into three climate-geographical areas with certain specifics regarding their breeding tradition and bullock feeding.

In huge commercial farms, there is only 8% of the entire number of bullocks, while in small family farms with over 10 bullocks, there is around 44 %. These households make a base for development of bullock breeding with us. The age structure of inhabitants in all households in extremely negative, and there is a fall in number of livestock in all transition countries, and it shall happen with us due to a gradual extinguishing of these households. The Simmental type of livestock has a strong genetic base for milk production.

The level of specialisation of households for certain forms of production is very low, due to a lack of educated labour, and the additional one is property divided into small parts. The issue of specialised production has started to be solved in the areas where educational programmes of producers have begun. The facilities and machines are dysfunctional and old.

5 The production of milk and dairy products in Serbia was in total of 827 432 hectoliters for the first two months of 2010 and 30 387 tons, and this was similar to the production accomplished in the same period last year. It was produced 638 673 hectoliters of pasteurized milk and 188 759 hectolitres of a sterilised one, it was announced by PKS. Also, 490 tons of powder milk was produced, 402 tons of butter, 2 843 tons of cheese and 26 652 tons of sour-dairy products.

The associations of livestock producers still function in selective bases, and not in economic needs for increase of investment capital. The selection services function symbolically, and artificial insemination is being conducted with no clear selection plan.

A special issue represents buying and processing of milk. The great capacities have been inherited from the previous period in milk and meat production, but they have been significantly degraded and allocated in an unbalanced way. Very few numbers of facilities fulfils conditions of high EU standards. Mini diary production plants fulfil high EU standards in a difficult way. On the other side, huge processing capacities in the country have been mostly privatised by foreign capital.[6] With all doubts of the way of privatisation, there is a positive fact is that in all privatised capacities the health safety systems have been introduced fast (HACCP). Significant credit means have been invested into modernisation of production of cooperative households, healthy reproduction bull flocks have been secured under suitable conditions, cooling systems and education of farmers have been improved, either. The production of these diary production plants has been based on selling of small commercial households.

New owners have done a lot regarding quality improvement, development of farming and fulfilment of the European standards, but they have also kept low buying prices and this has influenced onto production fall. Having privatised the milk industry and markets, a new tendency of pushing back of small milk producers has been indicated, since big diary production could be produced only by farmers with a number of cows. There are diary facilities where the process of privatisation has meant a collapse or bankruptcy. Having analysed current flows of privatisation of Serbian diary facilities, it can be concluded that it has not brought a benefit to all. It is obvious that there is a monopoly in the market of milk production. Producers still have low prices, consumers pay milk in expensive prices, and monopolists do not lack arguments and economic power to keep a seized part of the market.

A Normative Framework and Food Production Perspective

Ten percentage of population of developed countries become sick of diseases related to food per year. In the last two decades, food industry in the world has been faced with significant issues related to BSE, genetically modified organisms (GMO), for having dioxin, residual means for protection of plants and vet medicine, and together with globalisation of food trade and well-known affairs in the world; there is a danger of bioterrorism. The international community has found a solution for these issues in application of

6 The highest number of big Serbian diary plants have been bought by Investment Fund from the Great Britain "Salford", and it has become the owner of 65% of milk industry and dairy products in Serbia. The main office of "Salford" is in London, and it has been registered in Gibraltar. The establisher is Eugene Jeffrey, a Russian Jewish, in 2001, who immigrated to the USA in 80s and received his PhD at the most prestigious university of investment banking, and he returned to Moscow in the second half of 90s, as an American (Radojičić, B. (2011): *Action Plan on the Status of BSE in the Republic of Serbia and International Trade Exchange*. Collection of Works, Boook VI, Safety in Postmodern Ambient, CESNA B).

new technologies, improvement of consumers' information, defining and application of international standards and introduction of a traceability system (traceability-information in a production chain and food distribution, ISO 8402, 1994, EC/178/2002, US Bioterrorism Act, 2004), as a principal condition for creation of possibilities for additional confirmation of food origin fast, mistakes in production, location and withdrawal of items with minimal financial losses.[7]

The principal condition is the existence of adequate documentation, and marking of animals (1,4 million in 2005/06) has been the first step in this sense in Serbia. Starting from 01.01.2006, in the market of EU and WTO, the application of standards on food safety has become obligatory one, firstly in HACCP, so as the companies that do not possess certificates on business pursuant to all these standards, cannot sell their items out of borders of Serbia. The Law on Vet, besides having defined the role of vet service, has confirmed the law obligation of all food producers of animal origin to implement these standards.

A strategy on food safety and the Law on Food are a part of harmonisation measures of legal acts being a part of the integration demands of EU for accomplishing conditions for signing an Agreement on Association and Joining of EU[8] (the Law on Feeding, Law on Animals' Food, Law on Agriculture, Law on Phitosanitary, Vet and Sanitary Lab Agency, Law on Agricultural Property, Law on Organic Production and Organic Products also belong to this corpus). The Law on Food is the second key legal act that arranges the area of food safety. The principles of food safety have been defined from a field to a table, protection of consumers' interests, risk analyses, precaution, responsibility, persistence and transparency, either. The implementation of law is obligatory in all phases of production, processing and distribution of food and food for animals, except in primary production for own needs. The law includes food safety and food for animals (health proof and food quality). The responsibilities of all participants have been precisely defined in the chain and especially related to safety (a producer), risk analyse and communication (a national body for food safety), and also risk management (authorised ministries). The official control and monitoring programmes have been defined based on a risk evaluation (it includes animals, plants, subjects, processes, materials, activities, records, programmes, plans and others).

The entire law changes being partially stated have in their final aim a general benefit of costs-a maximal protection of health of people and animals, but also introduction of

7 The system of fast exchange of information RASFF related to food for people and animals has been based onto the regulations of the European Parliament and European Commission Council where the basic principles and assumptions on laws on food have been exposed. The information being exchanged among countries have been classified into three levels- it is necessary to keep a balance between the public and protection of commercial interests on the site, where the name of producers and companies have not been published, except in cases when protection of health of people demands it.

8 Serbia has accepted to do business pursuant to the regulations of EU and WTO before signing the Agreement on Stabilisation and Joining, i.e. joining to WTO. CEFTA represents the market with around 30 million people today, and its creation has been initiated by Commerce Chambers in the region.

civilisation standards through caring on animals' benefit and protection of environment, and keeping production profitability. The coordination shall be accomplished through an integral system of food safety and it shall include: protection of animals' health, control system of zoonosis, animals' benefit, hygiene and technical standards of production plants, HACCP concept in production and monitoring, control programmes of residual in the national level, certification of animal origin products.

The introduction of a new integrated approach of management- risk management has marked the end of 90s. After decades of mess in milk industry, it definitely has marked a turning point in the role of vet practice in milk production. In the 80s, a state was a main one in bringing decisions and the owner obeyed it with no objections. The appearance of big farms has brought vets to the position of adjustment in farm management. They have to discuss with farmers on certain measures, and thus they have become only one of the advisers in the farm management. A classical practice has lost its sense, although a part of classical procedures have stayed necessary until nowadays. Diary stores have had a greater significance onto the farm management, and thus onto the work of vet practice, and the level of services and abilities has been increased, either.

The appearance of disease and food poisoning and the pressure of public onto the introduction of standards in food safety has been an additional factor, with a crucial influence onto the entire management in the industry of dairy products. Therefore, the definition and introduction of standards have been reached (GMP, GHP, GAP, HACCP, ISO), and having brought new legal regulations in Europe (EC/178/2002 and others), some of the standards have become the obligatory ones[9]. A vet profession has accomplished a certain role in the procedures of their implementation and control. Vet management has experienced new changes and has become a part of the integrated support programmes to farm quality.

The health of animals is an aspect of quality and it must be united within health programmes of flocks into a general concept of management of farm quality, as HACCP is. Under HACCP concept, it has been understood the system that identifies, evaluates and controls risks being signficiant for food quality. The essence of this concept is securing of food safety, prevention through the integrated form of control, and the main responsibility is on the very producer. The base of this integration is in monitoring of animals, farms, management and physical factors in the production process. Having determined constituent elements of the production process, it is possible to identify places where critical points of production could appear. When these critical points have been identified, it is simpler to direct action towards accomplishing aims in reaching an optimal health condition of a flock and control of production quality.

9 In the European Union, these documents have been recorded as EUGAP (EU Good Agricultural Practices). It is especially significant to note the initiative of great European retailer chains EUREP (Euro-Retailer Produce Working Group) for development sufficiently accepted standards and the procedures of the international certification adjusted with the EUGAP that appeared onto the increased concern of consumers for food quality.

A Strategic Approach of the Republic of Serbia

The economy is a sector that needs time for development, and like in no other sector, a long-term prediction policy is needed, either. Therefore, the Ministry of Agriculture, by its National Programme wants to: send a clear signal where it shall be visible a readiness to implement reforms, define activities and supporting measures that shall be overtaken, and to set clear and real aims to be accomplished in the period from 2010-2013. This is the first National Programme of Agriculture, currently in a draft version, devoted to a numerous users that need to have a predictable and stable politics, staring from individual agricultural producers, companies to other ministries, non-governmental organisations, foreign investors and donators. The short-term and long-term aims of agricultural politics have been determined, ways and deadlines for their accomplishments, and also a type and scope of state stimulations.

In the part related to aims and agricultural measures of the politics, it has been emphasised that one of the aims is an increase of competitiveness, and it means a sustainable and efficient agricultural sector, that can be competitive in the world market, making the increase of national product. The agriculture of Serbia has been faced with numerous issues that are the result of a low investment mostly, and this has conditioned a low competiveness in the market. There are the examples of successful individuals that are competitive with their products thanks to their skills and creativity to adjust to new conditions. The very new conditions for the agriculture of Serbia mean a transfer from a central planned economy, where the highest responsibility is in the state apparatus, towards a market one, where in the centre of responsibility is an individual. New integration processes (joining to the World Trade Organisation and European Union) shall change the conditions of business even more, and it shall be reflected in a higher liberalisation of agriculture, and thus it demands a higher competitiveness.

The specific priority aims in the period 2010-2013:

- Improve the work of institutions for support-Agricultural Payment Administration and advisory services;
- Increase investments in the agricultural and rural sector;
- Improve cooperation and create mutual programmes with local institutions, so as to support agricultural producers and attract investors into a processing sector;
- Create conditions for commercial-credit financial sector to answer onto the needs of agricultural producers for credits;
- Stimulate competitiveness in the aim of quality increase of agricultural inputs;
- Improve the efficiency of usage of state agricultural property.

One of the priority aims related to food safety should bring to: increase of consumers' safety, higher profitability and competitiveness of food industry, increase of export by fulfilling demands of importing countries, change of exported products by domestic ones of the same safety level, reduction of control costs, and thus a cheaper production, securing international integration (membership in the EU and WTO).

The base of keeping health of animals, plants, people and environment is building of an integrated national system of monitoring upon diseases of plants and animals, and the highest responsibility is in the institutions, that having established legal regulations and improved the capacities of inspection services, should bring to the completely safe food. Also, the accomplishment of this aim can be supported by different structural measures in a direction of support towards investments into modern facilities that secure a higher level of food safety and introduction of standards.

The strategic approach of the Republic of Serbia includes numerous activities in the aim of improvement of life conditions and agricultural production in a village: investments into means for agricultural production and processing, building and renovation of village infrastructure, expert improvement of rural population, improvement of rural tourism, promotion of traditional and cultural values, protection of environment and similar. The basic issues that slow down development of the rural areas are: migration of rural population into urban areas, negative age structure of rural population, insufficient investments into village development, a permanent recognition of agriculture as business that is identical with development of villages, neglecting of other activities that contribute its development, capacities, infrastructure, rural tourism and similar. In the next period, it is certain to have in mind a fact that different regional areas are placed in different level of rural development, and thus they demand different systems of support measures.

Having increased the number of countries that have become members of EU in the previous period, it has been created a bigger market and new development chances for agriculture. Serbia has been already competitive with some products in the international market, but it is necessary to follow trends and adjust to market demands. Adjustment to the entire set of EU regulations in practice-a joined set of laws, regulations and procedures of functioning in EU, known under its name Acquis Communautaire, covers in its area on agriculture three groups: legal standards, mutual agricultural policy and so-called "structural funds". Legal standards relevant for agriculture are voluminous and include a number of areas, from animals' health, plants' health and food safety to marking of products and protection of consumers. A mutual agricultural policy of EU regulates mechanisms of functioning of the central agricultural budget of EU. Although Serbia does not have an obligation to implement MAP, it is needed to work in development and structural funds, thus it is necessary to work fast in establishment of these mechanisms.

Besides, the changes in the agricultural policy of EU are being reflected in reduction of support of market measures, minimal influence of support in production and increase of support in rural development. The activities the Ministry of Agriculture of Serbia shall work on in the next period until a full membership to EU are: adjustment of legislation, building of new institutions, personnel reorganisation, a permanent training of the employees. The adjustment of legislation of the Republic of Serbia and EU represents the most serious work in the process of European integration of Serbia. Having in mind that around 10 000 regulations are related to agriculture (agriculture, rural development, food safety, vet and phitosanitary policy, fishing), from the total of 27 000 of all regulations, it is clear how much it serious and voluminous work is. The National Programme for Integration of the Republic

of Serbia into EU (NPI) is a leading document in the process and represents a several year plan of adjustment of our legislation with the European one.

Together with the process of joining of EU, Serbia is in negotiations related to membership into the World Trade Organisation. The significance of joining to WTO lies in undisturbed market access of 153 member countries, where the entire world trade of goods and services of 97% is being performed. After accomplishing a full status of membership to WTO, Serbia expects a significant increase of level of direct foreign investments, and it shall be obliged to liberalisation of access to domestic market, and also limitations of agricultural budget, having the measures that are not pursuant to the policy of WTO (subvention of prices, exporting subventions and similar). The membership in WTO shall demand a few significant changes in the trade regime of Serbia, directed to: reduction of external protection and level of domestic support directly related to production, and also revoking of export subventions and certain out of customs barriers that Serbia applies. In the aim of adjustment of domestic agriculture and industry in new conditions, all predicted changes shall be implemented in phases. Since the implementation period of this Programme overlaps with duration of negotiations on joining to WTO, the implementation shall be determined with the negotiation results. The measures and policies contained in this Programme are pursuant to the policy of WTO.

The financial means for accomplishment of the Programme are being secured from the Budget of the Republic of Serbia, as means to the position of the Ministry of Agriculture, Forestry and Water Economy and additional donation means. The role of the budget is to assist a faster accomplishment of set aims, thus it is necessary to adjust the agricultural budget to the real needs of agriculture and country's abilities. Within the next four years, the creators of agricultural policy, producers, processors and consumers in Serbia shall face with numerous challenges. The changes that increase of competitiveness brings with the liberalisation process within WTO shall change in largely the business environment in agriculture. The most significant challenges that are to be in the development of business chains are: involvement of small producers into modern market chains, increase of competitiveness in the level of production and processing, creation of an active environment for investment, implementation of EU standards.

One of the most significant agricultural branches in Serbia is milk production, and it would be logical to be a turning point of agriculture and rural development of Serbia, as a part of mutual agricultural policy of EU. It is a sector where Serbia has significant potentials for its further development. Milk production is among the sectors with the highest value of primary production from over 500 million Euros a year, and it is being significantly increased with processing. Also, since the quantities and nutritive significant spending, this sector is very significant for food safety of the country. At the same time, it is the most demanding one for its standards to fulfil during joining to EU, and thus it can be the biggest obstacle. Trends in the area of diary production do not promise that Serbia shall be in the list of the most significant milk producers and dairy products after joining EU, and it is necessary to make serious reforms so as to increase its competiveness and allow starting a sustainable growth from all previous negative trends.

For development of milk production, it is necessary the time and a long-term predictability of the country, and by this Programme, the aims have been defined, and activities to be overtaken during 2010-2013 with the aim of improvement of milk sector and introduction of a higher predictability of the production. The specific aims for this period include the improvement of genetic content and increase of milk production, making of flocks into larger ones and strengthening of competitiveness of producers, improvement of milk control, gaining of permission for export of pasteurized and sterilised milk into EU.

Serbia has a dynamic milk trade and diary trade, especially among CEFTA countries. The most exporting one is a long-term milk and sour milk, while powder milk was the most imported one during 2007, whose import was almost insignificant, but since revoking of import during the end of 2007 and beginning of 2008, this was the first importing product. The values of import and export are in a permanent increase, but import is increasing faster that exporting. By signing the Agreement on Stabilization and Association, these trends shall be increased more since lowering the customs onto export of the products that have the origin of EU. Since the fact that the highest importing comes from EU countries, it is expected that consumers shall get cheaper products, but a trade balance shall worsen.

Conclusion

The economy diplomacy connects several scientific areas, firstly economy, politics, diplomacy and management, securing a unity of interests of certain entities and a national state. The economy diplomacy in agriculture starts from diplomacy and comes to top results in agricultural production of a country. The agriculture is a sector that needs time like in no other sector, and the long-term predictability of the politics. Thus, the Ministry of Agriculture of the Republic of Serbia with its National Programme, wants to: send a clear signal where the readiness for reform implementation shall be visible, define activities and measures to be overtaken, set clear and real aims to be accomplished in the period from 2010-2013.

One of the most significant agricultural branches in Serbia is milk production, and it would be logical to be a turning point of agriculture and rural development of Serbia, as a part of mutual agricultural policy of EU. It is a sector where Serbia has significant potentials for its further development. Milk production is among the sectors with the highest value of primary production from over 500 million Euros a year, and it is being significantly increased with processing. Also, since the quantities and nutritive significant spending, this sector is very significant for food safety of the country. At the same time, it is the most demanding one for its standards to fulfil during joining to EU, and thus it can be the biggest obstacle. Trends in the area of diary production do not promise that Serbia shall be in the list of the most significant milk producers and dairy products after joining EU, and it is necessary to make serious reforms so as to increase its competiveness and allow to start a sustainable growth from all previous negative trends. Having respect towards the role of human resources, it is needed to systematically build the personalities of business diplomats in the area of agricultural production, and it means a relevant assumption on the progress of a social community.

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EKONOMSKA DIPLOMATIJA I POLJOPRIVREDNA PROIZVODNJA – STRATEŠKI PRISTUP REPUBLIKE SRBIJE

Slobodan Nešković[10]

Rezime

Savremeni trendovi i objektivne okolnosti na globalnom planu uslovljavaju permanentnu potrebu za promenama i adaptacijom društvenih i političkih sistema, kako bi se ljudske mogućnosti iskoristile na optimalan način. Ekonomska diplomatija kao glavni cilj svog funkcionisanja pozicionira međunarodni nastup u promociji svih pozitivnih vrednosti zemlje, pri čemu afirmacija naših poljoprivrednih proizvoda predstavlja esencijalnu mogućnost i šansu na svetskom tržištu. Aktuelni međunarodni izazovi impliciraju esencijalnu poziciju čoveka i izgradnju ličnosti poslovnog diplomate, osposobljenog da sprovede reforme na svim nivoima upravljanja. Savremeni svet se suočava sa velikim problemom u obezbeđenju proizvodnje dovoljne količine zdravstveno bezbedne hrane, naročito animalnog porekla. Brojni činioci direktno, ali i neposredno preko hrane ugrožavaju zdravlje ljudi. Veterinarski menadžment zdravlja stada i proizvodnje u skladu sa porastom uticaja industrije mleka i javnosti u smislu zahteva da se dve oblasti u stočarskoj proizvodnji značajno unaprede, a to su bezbednost hrane i dobrobit životinja. Strateški pristup Republike Srbije uključuje sve relevantne subjekte zemlje, posebno ekonomske diplomate koji reprezentuju i afirmišu srpske nacionalne, prvenstveno privredne resurse na međunarodnom planu.

Ključne reči: *ekonomska diplomatija, poljoprivredna proizvodnja, bezbednost hrane, strategija, Republika Srbija*

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AGRICULTURAL LAND IN VOJVODINA AS ROE DEER HABITAT – HUNTING - TOURISM ASPECT

Risto Prentović[1], Dragan Gačić[2], Drago Cvijanović[3]

Summary

This paper is aimed at the acquisition of scientific data on the dynamics of development and actual status of roe deer populations on agricultural lands in Vojvodina (which occupy about 90% of its territory), and their utilisation for the advancement of hunting-tourism activities. The research is based on the following scientific methods: field research (monitoring and questionnaires), content analysis, measurement and evaluation of roe deer trophies, comparison and statistical method (descriptive statistics). The observed increasing trend in roe deer density and shooting in the field hunting grounds in Vojvodina (excepting the period 1992-2000), proves that this big game species is adapted to habitats with dominant arable crops. Despite the attained results, which are at the level of the European average, the potentials of roe deer, as the important hunting-tourism resource of Vojvodina, have not yet been sufficiently exploited, therefore an additional improvement of hunting management and hunting-tourism marketing is still required.

Key words: *roe deer, Vojvodina, agricultural land, hunting tourism.*

JEL: *Q29, Q19*

Introduction

The base of hunting, as a branch of economy, is game as a natural resource, which is in Serbia categorised as the general public (state) resource. Game is a significant (although not also a major) economic potential, but it is much more significant as the best bio-indicator of environmental quality. For this reason, any intervention in that natural resource, whether it is production, cultivation, protection or utilisation, has to take into account its conservation and enhancement, i.e. game populations and their habitats. The most important objective is to ensure the sustainability of hunting management and to

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preserve the game populations for future generations (Šelmić, Gačić, 2011). According to Prentovic et al. 2012 in most cases, rural areas have rich ecosystems and fairly preserved biodiversity, which provides favorable conditions for development of besides agriculture and forestry other economic activities such as water management, tourism, craftsmanship, urban planning, fishing, hunting, etc.

Game is the most important hunting-tourism resource and the key element of each hunting-tourism product, therefore, the offer of good quality individuals (in sufficient numbers and with valuable trophies) is the main condition of the success, i.e. profitability of any hunting-tourism destination (Prentović, 2005a,b, 2006). The Autonomous Province of Vojvodina is one of the most prestigious hunting-tourism destinations in South-Eastern Europe (Prentović, 2011). It occupies about 21,500 km^2, which accounts for about ¼ of the Republic of Serbia territory. With the exception of two low mountains - Fruška Gora (539 m a.s.l.) and Vršačke Planine (641 m a.s.l.), it is mostly a lowland and flat region. The most represented soil type is chernozem, which covers about 60% of the total area (the fertility of this soil type is high, and it is considered as the best soil for plant production), then humogley and alluvial soil (16.2% i.e. 9.0%, respectively). The greatest part of the area is agricultural land (about 17,900 km^2 or 83.3% of the total area), and forests and other wooded lands cover about 1,430 km^2 (6.7%), which makes Vojvodina one of the least forested regions in Europe. Infertile lands occupy about 2,170 km^2 or 10% (built-up areas and inland water areas). All the municipalities in Vojvodina account for more than 70% of agricultural land, except Beočin (45.6%), Sremski Karlovci (50.4%) and Šid (59.7%). This indicates that Vojvodina has a high potential for agricultural production, not only based on its good-quality soil (plough land and gardens occupy about 90% of arable land), but also because of its mild climate, plentiful water and long tradition. Generally, the soil in Vojvodina is not contaminated, so it is suitable for the production of highly valuable and safe food (Lazić et al., 2011, Sekulić et al., 2011).

The structure of agricultural soil in Vojvodina points out clearly that the prevalent form is arable-vegetable production. Simultaneously, agricultural lands (plough land, gardens, meadows, pastures) are permanent or temporary habitats to many game species, in which their cultivation is planned and their utilisation is rational. Special attention is drawn to roe deer (*Capreolus capreolus*), as the only big game species which also lives in the conditions of cultural steppe and which thrives on large parcels under monocultures. It is our most numerous and biologically and economically most valuable big game species, whose habitats in Vojvodina are for the most part agricultural lands. In the scope of hunting economy, roe deer has a high economic value, both for hunting (trophy as an attractive hunting-tourism motive), and for the production of gastronomically valuable venison. However, the habitat specificity (agro-bio-top) makes the most important cultural measures significantly more difficult, and therefore also the planned and rational management.

This paper is aimed at the attainment of scientific data on the dynamics of development and actual status of roe deer populations on agricultural lands in Vojvodina (hunting grounds managed by Hunting Associations), and their utilisation for the enhancement of hunting management and hunting-tourism activities.

Material and methods

The analysis of the dynamics of roe deer population density in Vojvodina was based on the data originating from different sources and documents: statistical bulletins and yearbooks (Federal and Statistical Office of the Republic of Serbia); official records of the Hunting Association of Vojvodina (Novi Sad), Hunting Association of Serbia (Belgrade) and the Public Enterprise "Vojvodinašume" (Novi Sad); Long-term Programme of Hunting Development in SAP Vojvodina (1984); Long-term Programme of Hunting Development in Vojvodina 2000-2010 (2000); Programme of Hunting Development in Serbia 2001-2010 (2001). The above data enable a reliable determination of the trends of roe deer density and shooting in Vojvodina in the period 1961-2011.

Trophy structure of roe deer populations in Vojvodina was analysed based on the data obtained by the evaluation of 1,902 trophy males taken over the period 2001-2005. The trophies originate from the hunting grounds managed by Hunting Association of Vojvodina by its members - Hunting Associations, of which 1,016 are from Bačka (9 hunting grounds) and 886 from Banat (3 hunting grounds). The trophies were evaluated by competent commissions consisting of certified trophy evaluators, according to the formula and the rules of the International Council for Game and Wildlife Conservation - CIC (n=1,341), according to the shorter evaluation procedure by coefficient 0.23 (n=561). After trophy evaluation, the unique criteria for medals were applied: gold (130 and more points), silver (115-129.9) and bronze (105-114.9).

Results and discussion

On the territory of Vojvodina, there are nine hunting regions[4], aiming at the realisation of unique national hunting policy, long-term rational management of game species populations and efficient undertaking of appropriate measures in hunting grounds. Based on the Law on Game and Hunting ("Official Gazette RS", number 18/10), Provincial Secretariat of Agriculture, Water Economy and Forestry, established altogether 147 hunting grounds within the above hunting regions, of which 18 are specific purpose hunting grounds[5], 13 hunting grounds in the area of registered fishponds, 115 hunting

4 Based on Article 34, paragraph 1 of the Law on Game and Hunting ("Official Gazette RS", number 18/10), the Government of the Republic of Serbia passed the Decree on the Establishment of Hunting Areas on the Territory of the Republic of Serbia ("Official Gazette RS", number 91/11). On the territory of Vojvodina, pursuant to the Decree, 3 hunting areas were established in each of the three regions - Bačka, Banat and Srem. However, after the new establishment of hunting grounds in Vojvodina (2010-2012), the total hunting area managed by hunting associations was not significantly changed, nor was its attitude to vegetation and crops. This points out that the data from the Programme of Hunting Development in Vojvodina (2000) and Serbia (2001) can still be considered actual and representative.

5 Specific purpose hunting grounds are established in the areas of the National Parks and in the areas with the majority percentage of state forests and other wooded lands. They are managed by Public Enterprise "Vojvodinašume" (17 hunting grounds) and the National Park "Fruška Gora".

grounds in the wild (the so called "open hunting grounds" managed by Hunting Associations), and one private hunting ground.

In hunting grounds managed by Hunting Associations (about 90% of the total hunting area in Vojvodina), roe deer is the principal and almost the only reared big game species, and the trophies of taken males are the main source of revenues from hunting management. The dominant land use in these hunting grounds is agricultural land which occupies about 17,470 km^2 or 87.9%, and forests and other wooded land cover about 530 km^2 or 2.7% (Long-term Programme of Hunting Development in Vojvodina 2000-2010). However, in forest hunting grounds in Vojvodina, especially in fenced hunting grounds, or fenced parts of hunting grounds (specific purpose hunting grounds), roe deer is only a secondary big game species.

The most favourable conditions for game survival on agricultural lands are observed in hunting grounds with more significant crop diversity, and also in small holdings. On the other hand, the regrouping of land parcels and the application of modern agricultural machinery, together with incorrect application of chemicals, cause the devastation of autochthonous vegetation in many hunting grounds in Vojvodina[6]. Also, the low percentage of forests and wooded lands in hunting grounds managed by Hunting Associations (2.7%) has an adverse effect on the survival and density of principal reared species of small game, such as brown hare and pheasant. For this reason, over several past decades, population density of small game has decreased significantly in hunting grounds on agricultural land in Vojvodina, especially the density of grey partridge, whose populations are on the verge of extinction.

In addition to adverse effects of intensive agriculture, natural conditions of the habitats in Vojvodina are further aggravated by industrial production (waste emissions into the atmosphere and discharges to watercourses), road infrastructure (emission of exhaust gases, game disturbance and wildlife-related traffic accidents, fragmentation of habitats), disasters (floods and droughts), predator species, and man-made specific effects (e.g. illegal hunting, nomadic pastoralism, irrigation channel revetment with plastic foils, etc.). On the other hand, the main favourable effects in hunting grounds on agricultural lands in Vojvodina are sufficient quantities of diverse food during the vegetation period and somewhat later on (remnants of agricultural crops).

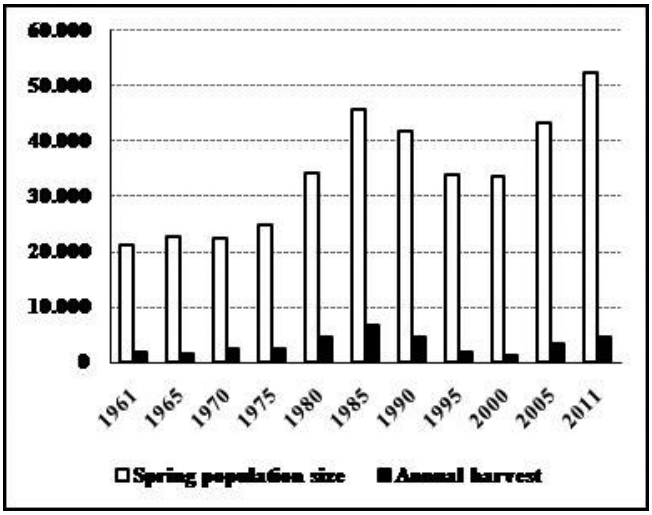
Globally unfavourable habitat conditions for the survival of many game species did not have an adverse effect on roe deer population density and distribution (Burbaite, Csányi, 2009). Furthermore, from a typical species living in minor forest complexes with many openings and clearings, because of which roe deer is said to belong to forest margins, it has become an important and a rather numerous participant of agro-ecosystems (Gačić, 2005a). It dwells in diverse habitats up to the limit of forest vegetation (about 2,000 m a.s.l.). However, its most favourable habitats are undulated submontane areas with alternating small parcels of mixed forests, meadows and arable lands (Šelmić, Gačić, 2011). The most important requirement regarding the habitats (excepting food) refers to natural laws which make it

6 See more in Andric et al, 1989.

possible to avoid predators and man (Aanes et al., 1998). Thanks to its relatively small body, it can survive in isolated groves or thickets, even in tall grasslands, which ensure the necessary shelter. Generally, roe deer is successfully adapted to changed human-induced environmental conditions. Also, roe deer is highly tolerant to extreme climate effects (it inhabits the climates from the hot and dry Mediterranean to cold boreal forests), and it can live in the areas where the snow reaches the level of its chest, about 1 m in extreme cases (Linnell et al., 1998).

Roe deer is an autochthonous big game species in our region. It is the most numerous big game in Europe, which is also the case on the territory of Serbia (therefore also Vojvodina). However, in a greater part of Serbia, the present roe deer density and the degree of utilisation are significantly below the natural habitat potentials. Hence, the most important plan documents in the field of hunting (e.g. Programme of Hunting Development in Serbia 2001-2010), thanks to roe deer biological and high economic significance as an autochthonous and hunting species, stress the increase in density and the improvement of structure (sex and age), as well as the improvement of roe deer trophy value, as one of the strategic decisions in the direction of Hunting Development in Serbia.

Graph 1. Reported spring population size and annual harvest of roe deer (*Capreolus capreolus*) in Vojvodina 1961-2011



Source: Savezni zavod za statistiku (1963–2003): Statistički bilten "Šumarstvo", br. 267-2359, Beograd and Republički zavod za statistiku (2005–2012): Bilten "Šumarstvo u Republici Srbiji", br. 442–552, Beograd, Dugoročni program razvoja lovstva Vojvodine 2000–2010, Lovački savez Vojvodine, Novi Sad and Program razvoja lovstva Srbije 2001–2010, Lovački savez Srbije, Beograd.

During the previous fifty-year period (1961-2011) there was an increase in roe deer density in the field and lowland hunting grounds managed by the Hunting Association of Vojvodina through Hunting Associations, except during the period 1992-2000 (Graph 1). Our results

show that the estimated roe deer density was the highest in spring 1985 (45,828 individuals or 2.4 animals per km^2), which is higher than the average roe deer density in Europe during 1984 (1.5 animals per km^2) (Burbaite, Csányi, 2009). Also, from 2001 to 2011, the average density of roe deer in Vojvodina increased from 1.8 animals per km^2 to 2.4 animals per km^2, which was equal to average roe deer density in Europe during 2005 (2.2 animals per km^2).

The highest roe deer density occurs in West and Central Europe (Burbaite, Csányi, 2009). The above authors report that from 1984 to 2005, the average roe deer density in Europe increased from 1.5 animals per km^2 to 2.2 animals per km^2. In 1984 the greatest roe deer density occurred in Germany (5.7 animals per km^2), Austria (5.5), Luxembourg (5.0) and Denmark (3.5). Also, in 2005 the highest density was found in the same 4 countries: Denmark and Luxembourg (9.3), Austria (8.9) and Germany (8.4). Their data show that 31.6% of the European roe deer population lives in Germany and 37% of roe deer are shot there.

Estimated roe deer density in spring 2011 (52,500 individuals) and the registered shooting during 2010/2011 (4,500 individuals) are almost equal to the values which are planned for 2010 (52,400 individuals) and 2009/2010 (4,560 individuals) within the Long-term Programme of Hunting Development in Vojvodina for the period 2000-2010. However, the values are still substantially lower compared to the values which were previously planned for 1990 (64,180 individuals) and 1989/1990 (7,700 individuals) within the Long-term Programme of Hunting Development in Vojvodina for the period 1982-1990. The above projections were, according to present-day assessments rather real, because they were based on density trends in the previous period (Programme of Hunting Development in Serbia 2001-2010). So, it can be concluded that the dynamics of roe deer population development in Vojvodina during the period 1961-2011 was not in proportion to habitat natural potentials. The main reasons for such state of affairs are: unprofessional management in many hunting grounds (e.g. unprofessional shooting per sex and age structure, or inadequate and insufficient winter feeding); unplanned and excessive utilisation (shooting a higher number of trophy individuals than planned, or illegal hunting); unprofessional shooting selection (especially of female individuals); as well as fencing of many forest hunting grounds for intensive rearing of big game (red deer and wild boar).

In the Hungarian hunting grounds, on similar habitats, the greatest problems in roe deer hunting management occur because of overestimating the real density, as well as because of insufficient shooting of females and excessive shooting of the best males. The above problems are not only the result of mistakes in the roe deer population strategy, but also the result of degradation in habitat quality (Csányi, 1989). The changes in Hungary from the middle of the seventies – monoculture cultivation, intensive application of machinery and chemicals, have become a general problem. Moreover, numerous shelterbelts are removed and the diversity of agro-bio conenoses decreased both in cultivated and in weed species. All the above facts caused the decrease in the economic capacity of the habitats, and roe deer had to change their feeding habits and to consume inadequate nutrients over the autumn and winter periods (Farkas, Csányi, 1990). The measures proposed for the improvement of roe deer hunting management in Hungary are: (1) more accurate census

of populations (including age structure), control of shooting per density and structure, and the determination of optimal population density; (2) intensive selection of young males with low-ranking antlers and the protection of middle-aged males with good antlers; (3) improvement of habitat conditions and supplementary feeding. The above measures can also be applied in roe deer hunting management in field hunting grounds in Vojvodina (Gačić, 2005a, b).

The registered shooting of roe deer in Vojvodina hunting grounds was the highest in the period 1982-1990 (before the disintegration of the former Yugoslavia) and it ranged between 5,390 and 6,900 individuals. It is well known that shooting is the basic method of planned and rational use of reared game species. However, our results show that registered shooting in the period 1961-2011 was occasionally disproportionate with the estimated roe deer density (Graph 1). The degree of roe deer utilisation compared to spring density ranged between 2.7% (1962) and 15.2% (1983)[7]. These values agree with the results reported by other authors (Burbaite, Csányi, 2009). Their studies show that in 1984 it varied from 2.4% (Belarus) to 44.2% (Austria) with an average of 22.1%; in 2005 it varied from 0.02% (Turkey) to 43.3% (Walloon region of Belgium) with an average of 21.6%. Also, the Programme of Hunting Development in Serbia 2001-2010, states that roe deer annual shooting accounting for 10-12% of the spring density is real in the managed hunting grounds and professionally managed hunting grounds. However, the degree of roe deer utilisation in hunting grounds of Vojvodina in the period 1995-2011 ranged between 6.5% (1999) and 8.6% (2011), which is a very modest result which is not in harmony with the natural habitat potentials.

Table 1 shows the trophy structure of males in spring hunting in Vojvodina (Bačka and Banat)[8] in the period 2001-2005. One of the main goals of roe deer hunting management is the sustainability of high-quality and vital populations with all elements of structure which ensure successful reproduction and valuable trophies (Gačić, 2006). The realisation of this goal ensures the real conditions for economic utilisation of hunted individuals (revenues from the sale of trophies and meat). In addition to their high economic significance, trophies are simultaneously an indicator of individual quality and health, living conditions in the hunting grounds and hunting and rearing activities. In the hunting grounds managed by Hunting Associations in Vojvodina, the males with the highest trophies, and therefore the highest economic value, are mainly shot by foreign hunters, so in most hunting grounds the hunting plan is realised already at the beginning of the hunting season[9]. However, the specificity of

7 During the period 1982-1990 (when shooting was the highest), the average degree of roe deer harvesting compared to spring density accounted for 14.4% (ranging between 13.6% and 15.2%).

8 The region of Srem was not taken into account because of the lowest roe deer density, and because the registered shooting has mainly of the selection character.

9 Hunting season for males lasts from 15th April to 30th September, and for females and fawns from 1st September to 31st January, which is determined by the Regulation on the proclamation of close season of the protected game species (Official Gazette of RS, no. 9/12), which was passed by the Minister of Agriculture, Forestry and Water Management and the Minister of Environment, Mining and Spatial Planning.

habitat conditions (agro-bio-top) makes the hunting significantly more difficult, especially regarding the age and trophy value assessment (Gačić, 2005b).

During the first study year (2001) the analysis consisted of 336 trophies, of which 169 from Bačka (=90.2 points, min-max=26.0-140.6) and 167 from Banat (=81.5 points, min-max=23.2-142.2). The most valuable trophy was taken in the hunting ground Jaruge (Novi Bečej). The greatest number of analysed trophies were below 69.9 CIC points (32.7%), and 19.9% trophies achieved medal status by the number of medal winning CIC points (Graph 2). During the second year (2002), 392 trophies were analysed, of which 193 were from Bačka (=91.3 points, min-max=23.2-137.5) and 199 from Banat (=83.4 points, min-max=23.9-140.5). The most valuable trophy was from the hunting ground Jaruge (Novi Bečej). The greatest number of analysed trophies were below 69.9 points (25.0%), and 21.2% trophies achieved medal status. During the third year (2003), 441 trophies were analysed, of which 244 were from Bačka (=89.6 points, min-max=24.4-179.6) and 197 from Banat (=87.4 points, min-max=41.6-143.7). The most valuable trophy was from the hunting ground Kapetanski Rit (Kanjiža). 19.5% of trophies achieved medal status. During the fourth year (2004), 336 trophies were analysed, of which 195 were from Bačka (=87.6 points, min-max=29.4-148.1) and 141 from Banat (=91.3 points, min-max=31.9-139.4). The best trophy was taken in the hunting ground Senćanski Salaši (Senta). 22.0% of trophies achieved medal status. During the fifth year (2005), 397 trophies were analysed of which 215 were from Bačka (=90.3 points, min-max=38.9-155.0) and 182 from Banat (=90.3 points, min-max=47.5-150.7). The most valuable trophy was from the hunting ground Senćanski Salaši (Senta) 22.1% trophies achieved medal status.

Table 1. Trophy structure of males in spring hunting in Vojvodina 2001-2005

Hunting ground	Total (N)	Total trophy score (CIC points)				
		≤69,9	70-104,9	105-114,9	115-129,9	130≥
Kapetanski rit (Kanjiža)	437	79	271	40	30	17
Senćanski salaši (Senta)	201	13	126	31	22	9
Gornji rit (Mol)	68	18	37	4	7	2
Donji rit (Ada)	73	16	32	12	8	5
Bečejski salaši (Bečej)	61	7	32	10	11	1
Lalinske livade (Odžaci)	176	62	100	7	6	1
Bačka	***1,016***	***195***	***598***	***104***	***84***	***35***
Begej (Zrenjanin)	164	83	75	5	1	-
Jaruge (Novi Bečej)	346	52	191	50	37	16
Veliki siget (Novi Kneževac)	376	106	204	45	18	3
Banat	***886***	***241***	***470***	***100***	***56***	***19***
VOJVODINA	**1,902**	**436**	**1,068**	**204**	**140**	**54**

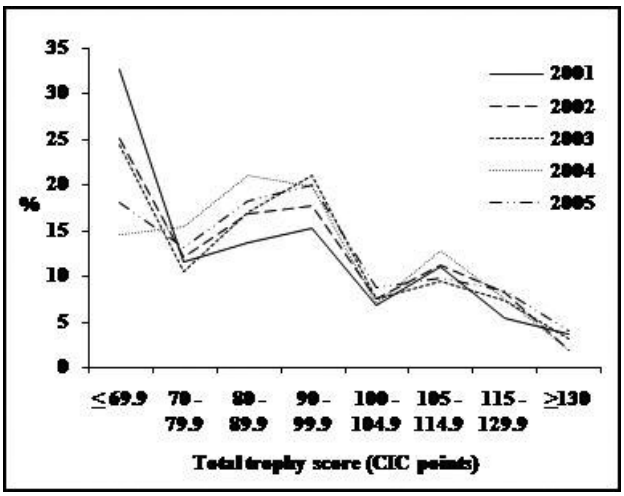
Source: Gačić (2005 a, b)

Our results show that during the five successive years (2001-2005) 1.8–4.0% of trophies were of gold medal quality, 5.4–8.3% of trophies were of silver medal quality, and 9.3–12.8%

of trophies were of bronze medal quality (Graph 2). However, the research performed in Hungary during the period 1981-1985 (Szidnai, Köller, 1987) shows that in the total annual shooting of males, trophy percentage in medal was less than 10%, and in total annual shooting of both males and females, trophy percentage in medal accounted for less than 4%. Similarly, in Hungary over the period 1973-1986, annual trophy percentage in medal ranged from the lowest 4.4% (1986) to the highest 9.7% (1981) (Farkas, Csányi, 1990). The higher trophy percentage in medal which was determined in our study is explained by the fact that the analysed samples (total 1,902 trophies) consisted mainly of male trophies shot in trophy hunting, of which a great number (n=561) was rated according to the shortened procedure, using the coefficient 0.23 (without the measurement of antler volume), which results in a higher total score than by using the formula of the International Council for Game and Wildlife Conservation - CIC (Gačić, 2005a). Also, the total number of analysed trophies per individual years actually consists of a smaller part (about 30%) of the total shooting of males in the field hunting grounds in Vojvodina.

Some authors (Hromas, 1983) report that annual number of shot males with trophies in medal is narrowly related to spring density of roe deer populations and to total removed individuals (both shooting and losses). This author reports that in Czechoslovakia, the average annual harvesting of males with trophies in medal over the period 1966-1976 accounted for 0.07% of the spring population density, and it varied between 0.03% and 0.15%.

Graph 2. Trophy structure of males in spring hunting in Vojvodina 2001-2005



Source: research by authors

Hunting tourism is a special form of tourism and its main specificity is the fact that the creation of the motive for this kind of tourism depends on the availability of game for hunting. However, by the realisation of hunting tourism, the game is consumed (shot), so the hunting-tourism offer is limited by game density. For this reason, the hunting-tourism offer should be based on shooting plans, macro-geographically (by regions, for the entire Province and

Republic) and micro-geographically (by hunting ranges, hunting grounds) (Programme of Hunting Development in Serbia 2001-2010).

In the majority of hunting grounds managed by Hunting Associations in Vojvodina, the roe deer trophies are major sources of revenue for hunting management. In addition to trophy fee, a hunter pays for the entrance to the hunting ground and all other costs of hunter programme (organization of the hunt, manipulation of shot animals and game trophy rating), as well as accommodation costs (full board and extra services). The fee depends on the trophy weight in grams (trophies with total score up to 150.0 CIC points) according to the price list issued by the steering committee of the Hunting Association, which should be in accordance with the price list issued by the steering committee of the Hunting Association of Serbia. The provision for hunting-tourist services is determined by a contract between the hunting ground user and tourist agency. The fee for one shot roe deer with trophy up to 249 g is 100 EUR, and the fee for one shot roe deer with trophy in medal, especially the golden one, can reach several thousands of Euros, so each hunting year a significant revenue is earned from the hunting tourism "sale" of roe deer. There are no precise and systematised data on the total hunting-tourism turnover in Vojvodina, or on the revenues in hunting management of roe deer populations. However, the official data (Graph 1) show that roe deer in many hunting grounds in Vojvodina is not sufficiently exploited, although it is a very attractive segment of hunting-tourism products, and the most numerous and economically the most valuable species of big game. Consequently, the earned income is still substantially below the potential of the natural habitats.

Conclusion

The study results point to the fact that roe deer populations in lowland habitats on agricultural lands in Vojvodina over the past fifty years have doubled their density, which is especially significant from the aspect of economic (and particularly hunting-tourism) utilisation of this natural resource. In addition to their great adaptation ability, which characterises this most numerous and economically the most valuable big game species, a contribution to the increase in its population density in Vojvodina is also better hunting management than it was the case in the past, as well as sufficient quantities of diverse food for this game species during the growing season and for some time later on (remnants of agricultural crops).

Despite the significant improvements in hunting management (excepting the stagnation and decrease in the last decade of the past century), the achievements are still not compatible with the optimal potentials, especially in the sphere of hunting-tourism utilisation of roe deer. This is because there are some weaknesses, first of all unprofessional hunting management and low-quality tourism marketing in a considerable number of hunting grounds. The necessary condition for the solution of these weaknesses is the engagement of a higher number of highly professional staff in forestry, agriculture, veterinary medicine, economy and hunting-tourism employed in hunting grounds, administrative organs responsible for hunting affairs, tourist organisations and hunting-tourism agencies.

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POLJOPRIVREDNO ZEMLJIŠTE U VOJVODINI KAO STANIŠTE SRNEĆE DIVLJAČI – LOVNO-TURISTIČKI ASPEKT

Risto Prentović[10], Dragan Gačić[11], Drago Cvijanović[12]

Rezime

Cilj ovog rada je sticanje naučnih saznanja o dinamici razvoja i aktuelnom stanju populacija srneće divljači na poljoprivrednom zemljištu u Vojvodini (koje zauzima oko 90% njene teritorije), kao i korišćenje istih za unapređenje lovno-turističke delatnosti. U istraživanju su korišćene sledeće naučne metode: terenski rad (sistematsko posmatranje i intervjuisanje), analiza sadržaja, merenje i evaluacija trofeja srndaća, komparacija i statistički metod (deskriptivna statistika). Evidentan je trend povećanja brojnosti i odstrela srneće divljači u poljskim lovištima Vojvodine (izuzev perioda 1992-2000), što dokazuje da se ova vrsta krupne divljači adaptirala na staništa sa dominantnim ratarskim kulturama. Uprkos ostvarenim rezultatima, koji su na nivou evropskog proseka, još uvek nisu u dovoljnoj meri iskorišćeni potencijali srneće divljači kao važnog lovno-turističkog resursa Vojvodine, zbog čega je neophodno da se dodatno poboljša lovno gazdovanje i lovno-turistički marketing.

Ključne reči: *srneća divljač, Vojvodina, poljoprivredno zemljište, lovni turizam.*

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THE DEVELOPMENT OF THE MARKET PRODUCTION OF CEREALS IN SERBIA: EXAMPLE WHEAT AND CORN [1]

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Abstract

In the paper, the tendencies in the development of wheat and corn production in the time period from 1976 to 2010 are researched, with a focus on the cluster analysis of the market production of these products per districts in Serbia in 2009. On the basis of more important available land capacities, the volume of production and scope of economic development, the I-distance method is used to rank the districts. The ranking of the districts according to the analysed characteristics is conducted on the basis of the median value of data per municipalities. For each of the mentioned groups of characteristics, the I-distance is used to rank the districts from 1 to 25, Rank 1 being the best and Rank 25 the worst. The similarities of the districts according to the analysed characteristics are accounted for by a complete link method of a hierarchical cluster analysis and the results are represented by a dendrogram and a cartogram.

Apart from favourable conditions (land, climate, and so on), producers' traditional habits have to the greatest extent had an impact on the unjustifiably high presence of wheat and corn in the structure of crop production. That, to a great extent, has had an influence on the high marketability of the production of wheat and corn in Serbia as well.

Key words*: market production, wheat, corn, I-distance, cluster analysis.*

JEL*: Q13, R11, O11*

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Introduction

Researching the development of market production in the Serbian agriculture is necessary for big changes that have occurred on the world economic stage, overall economic development, revealed recessional tendencies and the opposition of development at the end of the last and at the beginning of this century, as well as of gaining an insight into certain specificities in the development of agriculture under the influence of economic-systemic and economic changes. For all that, there is a need for acquiring current scientific knowledge of the development of market production in agriculture in a modified internal and external market environments, all the more so because the export of agricultural goods is one of rare positive items in Serbia's foreign-trade balance.

In the past 30 years, Serbia's agriculture has gone through significant qualitative changes reflected in an increase in market production, a high degree of deagrarianization, an increase in the level of productivity, a decrease in the share of primary production and an increase in the share of processing industries in the structure of GDP etc. The global process of industrialization has an influence on the development of the market of agrarian products, provides contemporary inputs for agriculture and allocates the surpluses of workforce from agriculture, thus creating conditions for a faster economic development. The overall economic development, industrial in particular, influences the development of agriculture. On the other hand, the development of market production is a clear indicator of the economic and material development of a country. Market production is directly connected with the intensity and fastness of the overall economic and industrial development.

Crop production, especially the production of wheat and corn, is a significant segment of the overall development [4] of agriculture. It represents the basis for the development of cattle production and processing industries, which, ultimately, is a precondition for the diversification of the agro-industrial sector. Differences in the natural and economic conditions of the production of wheat and corn have an influence on the degree of marketability per districts in Serbia. An increase in the scope and degree of marketability has an influence on the development of agriculture, i.e. the development of the overall economy.

The aim of this paper is to determine the development of the market production of wheat and corn per districts in Serbia on the basis of the characteristics of land capacities (5 characteristics), production (8 characteristics) and development (4 characteristics). On the basis of the said characteristics, the I-distance was used for ranking the districts.

By gaining an insight into the three groups of characteristics, the results of the research are deemed to be the basis for the implementation of the optimal production regionalization and the application of a unique agrarian policy for the districts, i.e. municipalities belonging to the same cluster.

4 In the structure of the value of Serbia's agricultural production, crop production has an over 50% share, whereas in developed countries, the share of cattle production as a higher stage of processing compared to crop processing is over 70%.

The working method and data sources

By a comparative analysis, we determined that there is a significant differentiation between the districts according to the degree of the marketability of wheat and corn production. Apart from marketability, the paper also gains an insight into differences in available land capacities, the volume and structure of production and the level of development per districts in Serbia.

An analysis of the degree of the marketability/volume of the production of cereals has been published for the two most represented products: wheat and corn.

The ranking of the districts by the I-distance method [5] was conducted on the basis of the following three groups of characteristics: **a) land capacities (5, from x_1 to x_5)** (x_1 – the share of arable land in agricultural areas, x_2 – the share of plough-fields and gardened areas in arable areas, x_3 – the share of areas under cereals in ploughed areas, x_4 – the share of areas under wheat in areas under cereals, x_5 – the share of areas under corn in areas under cereals), **b) production (8, from x_6 to x_{13})** (x_6 – areas under wheat in ha, x_7– wheat yields in t/ha, x_8– wheat production in tons, x_9– the wheat production marketability degree, x_{10}– areas under corn in ha, x_{11}– corn yields in t/ha, x_{12}– corn production in tons, x_{13}– the corn production marketability degree), and **c) the level of development (4, from $x_{14}$to x_{17})** (x_{14}– NI/capita, x_{15}–the share of agriculture in the NI of the economy, x_{16}– the percentage of an increase/decrease in the number of the population in 2009 compared with 2002, x_{17}–the percentage of agricultural population).

On the basis of data per municipalities, it was determined that there is a significant difference between the middle value and the median calculated for data at the district level because the analyzed characteristics per municipalities do represent a normal distribution of data at the district level. The ranking of districts according to the analyzed characteristics was conducted on the basis of the median value of data per municipalities. For each of the mentioned groups of characteristics (land capacities, production, development), the I-distance was used to rank the districts from 1 to 25, Rank 1 being the best and Rank 25 the worst.

$$D_k = \sum_{i=1}^{n} \frac{|X_{1k} - X_1^-|}{S_1} \prod_{j=1}^{i=1} (1 - r_{ij})$$

By applying the cluster analysis, homogenous groups of districts were defined from the viewpoint of the degree of the marketability/volume of cereals (corn and wheat) production. The similarities of the districts according to the analyzed characteristics of wheat and corn production are defined by the Euclidean measure of distance, while a complete link method was used to group Serbia's districts. The generated results of the hierarchical classification are accounted for by a dendrogram and a cartogram.

5 Ivanović's Distance.

For the purpose of analyzing the characteristics of land capacities and production (x_1-x_{13}), data published by the Republican Agency for Statistics in *Municipalities in the Republic of Serbia in 2009* were used. Since the year 2006, no data of the characteristics of the level of development (x_{14}-x_{17}) per districts have been published, so, to generate those characteristics, the publication *Municipalities in the Republic of Serbia in 2005* was used.

Wheat and corn production and degree of marketability

Traditionally, cereals represent the leading agricultural products in a large number of countries worldwide. For the majority of the population, they are still the main food. Over 50% of the energy value of an average daily world meal in the population's diet is provided by this product group. Apart from a high share they have in the population's diet, cereals represent the basis for the development of intensive cattle production, and are also a significant industrial raw material (Đorović et al., 2006:93). In a large number of countries throughout the world, wheat and corn have a significant place in the structure of areas under cereals.

Traditionally, wheat and corn were deemed synonymous for predominantly natural crop cultures. On rural estates, people primarily satisfied their needs for bread grains while its market orientation only sporadically appeared in fertile years. Together with economic development and the growth of labor productivity, wheat and corn become market products. So, wheat and corn gradually move from smaller to bigger estates and regions with more favorable natural conditions. That is a precondition for regional allocation and labor distribution.

Together with changes in economic development, the structure of sowed areas, the volume of wheat and corn production and their yields per hectare are also significantly changing. Once deficient products, wheat and corn are now becoming surplus products in Serbia.

In the time period between 1976 and 2010, areas under **wheat** reduced by 38% (from 853.0 thousand ha to 527.7 thousand ha), the volume of production reduced by 39% (from 3.1 mill. tons to 1.9 mill. tons), and yield reduced by 3% (from 3.7 t/ha to 3.6 t/ha). However, after the year 1990, the average yield of wheat reduced from 4.2 to 3.6 t/ha [6] (the time period between 2006 and 2010), whereas the volume of production fell from 3.1 million tons to 1.9 million tons in the time periods 1986-1990 and 2006-2010, respectively. In the time period between 1976 and 2010, the average annual rate of the reduction of areas under wheat was -1.82%, production -2.20% and yields -0.39%.

So, having once been a surplus country, Serbia came closer to the bottom limit of self-sufficiency in wheat production. Because of big oscillations in production, certain wheat export quotas cannot be counted on. That significantly mitigates Serbia's competitiveness[7] in exporting wheat onto the foreign market.

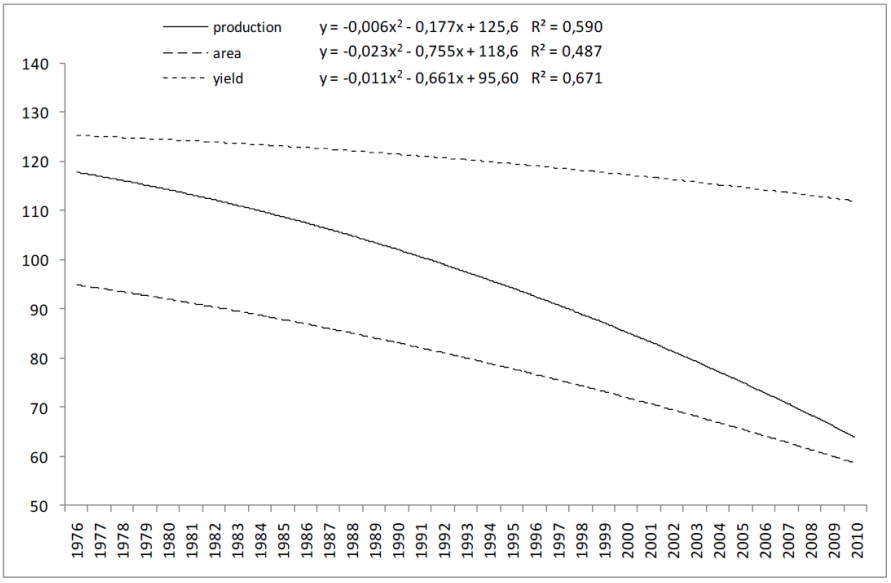
6 Wheat genetic potentials are over 10 t/ha and those of corn are over 15 t/ha.

7 Countries sporadically exporting products obtain lower exporting prices than countries with permanent quotas for the export of a product.

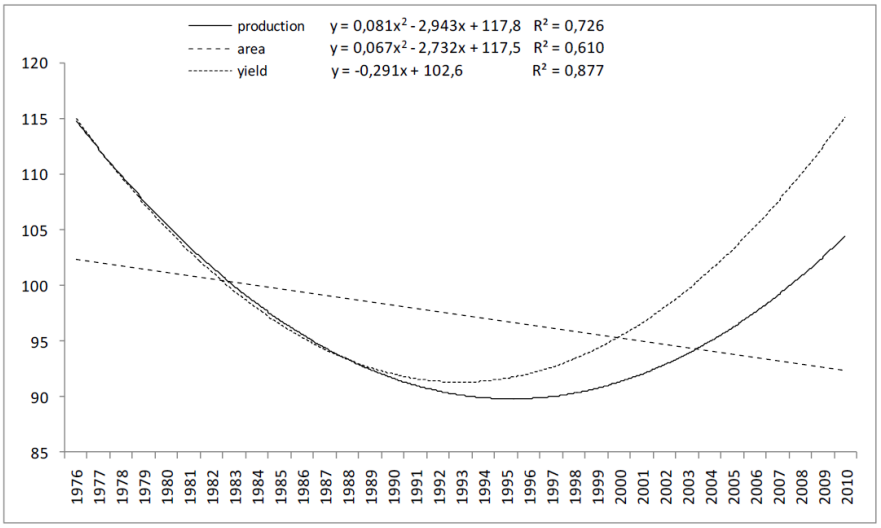
Differently from wheat, after the year 1995, **corn** recorded a 6% reduction of sowed areas. By the 15% reduction in the volume of corn production in the time period from 1986 to 1990, the production today is at the level it had in the 1970's, which is around 5.9 mill. t. However, yields of corn are by 7% higher than they used to be in the 1970's and are around 4.9 t/ha. The annual rate of the reduction of areas under corn was 0.31% whereas the production rate increased at the rate of 0.56% and the yields rate at 0.87%.

Chart 1. Wheat and corn production, areas and yields indices in the Republic of Serbia in the time period from 1976 to 2010

Wheat



Corn



The reduction of areas and an increase in corn production, as the result of the increase in yields per ha, represent a legal tendency of the overall development of the country. In the time period to come, a similar tendency can be expected in wheat production as well.

Table 1. The degree of the marketability, production, areas and yields of wheat per districts in Serbia in the year 2009

	Production marketability		Production		Area		Yield	
	Market surplus 000 t	Market-ability degree %	000 t	%	000 ha	%	t/ha	Index Serbia =100
Republic of Serbia	990.9	47.93	2067.6	100.0	567.7	100.0	3.64	100.0
Central Serbia	138.3	15.79	876.1	42.4	266.0	46.9	3.29	90.4
AP Vojvodina	852.6	71.56	1191.4	57.6	301.7	53.1	3.95	108.4
Belgrade-City district	-104.7	-98.15	106.7	5.2	28.9	5.1	3.69	101.4
North Bačka district	85.6	71.29	120.1	5.8	31.1	5.5	3.86	105.8
Middle Banat district	151.8	76.79	197.7	9.6	53.1	9.4	3.72	102.1
North Banat district	69.7	70.06	99.5	4.8	31.1	5.5	3.20	87.8
South Banat district	147.0	73.24	200.7	9.7	51.5	9.1	3.90	106.9
West Bačka district	126.3	74.70	169.1	8.2	39.0	6.9	4.34	119.2
South Bačka district	157.0	67.15	233.8	11.3	54.2	9.5	4.32	118.5
Srem district	115.3	67.54	170.7	8.3	41.6	7.3	4.10	112.6
Mačva district	32.4	36.70	88.3	4.3	25.4	4.5	3.48	95.6
Kolubara district	3.0	9.12	32.9	1.6	11.2	2.0	2.93	80.5
Danube district	21.6	43.35	49.9	2.4	13.7	2.4	3.65	100.3
Braničevo district	45.0	51.21	87.9	4.3	27.3	4.8	3.22	88.4
Šumadija district	34.9	50.35	69.4	3.4	19.1	3.4	3.64	99.9
Morava district	19.3	37.60	51.5	2.5	13.5	2.4	3.82	104.9
Bor district	27.5	49.61	55.5	2.7	17.2	3.0	3.22	88.5
Zaječar district	19.5	41.39	47.1	2.3	15.5	2.7	3.05	83.6
Zlatibor district	-23.8	-299.86	7.9	0.4	2.8	0.5	2.86	78.6
Moravica district	-2.1	-10.28	20.5	1.0	6.3	1.1	3.28	90.0
Raška district	-11.3	-72.52	15.6	0.8	5.0	0.9	3.14	86.3
Rasina district	8.2	19.50	41.8	2.0	11.9	2.1	3.51	96.3
Nišava district	25.6	39.00	65.7	3.2	21.3	3.7	3.09	84.8
Toplica district	14.4	48.09	30.0	1.4	11.2	2.0	2.67	73.4
Pirot district	6,2	31.98	19.4	0.9	6.2	1.1	3.15	86.4
Jablanica district	18,9	35.57	53.3	2.6	18.6	3.3	2.86	78.5
Pčinja district	3,5	10.77	32.9	1.6	11.2	2.0	2.94	80.7

Source: Republican Agency for Statistics, Belgrade

Wheat and corn are the most widespread crop cultures in Serbia. In the structure of sowed areas in the year 2009, wheat and corn had a share of 17.2% and 36.6%, respectively.

Table 2. The degree of the marketability, production, areas and yields of corn per districts in Serbia in the year 2009

	Production marketability		Production		Area		Yield	
	Market surplus 000 t	Market-ability degree %	000 t	%	000 ha	%	t/ha	Index Serbia =100
Republic of Serbia	3999.5	62.53	6396.3	100.0	1208.6	100.0	5.29	100.0
Central Serbia	758.8	31.67	2396.0	37.5	530.9	43.9	4.51	85.3
AP Vojvodina	3240.7	81.01	4000.3	62.5	677.8	56.1	5.90	111.5
Belgrade-City district	125.5	46.07	272.3	4.3	54.2	4.5	5.03	95.0
North Bačka district	390.2	86.93	448.9	7.0	77.2	6.4	5.82	109.9
Middle Banat district	423.7	82.31	514.7	8.0	88.2	7.3	5.84	110.3
North Banat district	283.7	83.49	339.8	5.3	70.5	5.8	4.82	91.1
South Banat district	720.2	79.68	903.9	14.1	146.5	12.1	6.17	116.6
West Bačka district	390.9	81.97	476.8	7.5	76.9	6.4	6.20	117.2
South Bačka district	510.5	77.58	658.1	10.3	105.8	8.8	6.22	117.5
Srem district	521.4	79.22	658.1	10.3	112.8	9.3	5.84	110.3
Mačva district	126.0	35.04	359.5	5.6	70.3	5.8	5.11	96.6
Kolubara district	60.0	38.96	154.0	2.4	32.9	2.7	4.68	88.4
Danube district	61.8	39.31	157.1	2.5	38.9	3.2	4.04	76.3
Braničevo district	127.7	50.50	252.8	4.0	60.9	5.0	4.15	78.5
Šumadija district	77.4	43.21	179.0	2.8	35.6	2.9	5.02	94.9
Morava district	114.2	48.88	233.6	3.7	52.4	4.3	4.46	84.2
Bor district	-4.6	-7.25	63.9	1.0	16.9	1.4	3.78	71.5
Zaječar district	7.7	9.63	80.0	1.3	18.8	1.6	4.26	80.5
Zlatibor district	-5.9	-20.92	28.4	0.4	8.4	0.7	3.40	64.2
Moravicadistrict	20.6	28.47	72.4	1.1	15.7	1.3	4.62	87.2
Raška district	18.2	27.13	67.2	1.1	13.3	1.1	5.06	95.6
Rasina district	41.1	25.05	163.9	2.6	32.4	2.7	5.06	95.6
Nišava district	7.7	6.23	123.2	1.9	30.4	2.5	4.05	76.5
Toplica district	-2.7	-6.34	42.6	0.7	11.5	1.0	3.69	69.8
Pirot district	0.4	1.50	26.9	0.4	7.0	0.6	3.85	72.8
Jablanica district	-8.2	-9.54	85.9	1.3	21.2	1.8	4.06	76.7
Pčinja district	-9.7	-29.27	33.3	0.5	10.2	0.8	3.26	61.7

Source: Republican Agency for Statistics, Belgrade

The marketability of wheat production significantly fell from 46.7% to 27.4%. Around 27% was sold and bought, while an extremely small amount of around 0.2% of the total production was traded in the farmers' market. Also, the marketability of corn production significantly declined from 10.8% to 6.9%. An extremely small amount of production, around 7%, was sold and bought, whereas around 0.3% was traded in the farmers' market (Đorović, Stevanović, 2006:216).

However, there are differences in the degree of wheat and corn production marketability, both per macro-regions in Serbia and per analyzed districts. In 2009, the marketability of wheat and corn production was 47.9% and 62.5%, respectively. In AP Vojvodina, there

was 71.6% marketability and in Central Serbia it was only 15.8%. Differences between different districts are also present in corn production marketability. Namely, the degree of corn marketability is 81.0% in Vojvodinaand31.7% in Central Serbia.

There are also big differences in the wheat and corn production volume per districts in Serbia. In Vojvodina in the year 2009, 57.6% and 62.5% of wheat and corn, respectively, was produced, and Central Serbia only produced 42.4% and 37.5% of wheat and corn, respectively. (Tables 1 and 2)

Apart from Belgrade, the wheat production deficit in the year 2009 was recorded in only three more districts (Zlatibor, Moravica and Raška districts). In three districts (South Bačka, South Banat and Middle Banat districts) in Vojvodina, almost 30% of wheat production was realized. Exactly in those districts, the yield of wheat per ha, higher by around 18%, was achieved, in comparison with the average yield in Serbia.

Apart from Belgrade, the corn production deficit in the year 2009 was recorded in five more districts (Bor, Zlatibor, Toplica, Jablanica and Pčinja districts) in Central Serbia. Similar to wheat, one-third of corn production was generated from three districts (South Banat, Srem and South Bačka districts) in Vojvodina. In these districts, the yield of corn per ha was 10-18% higher than the average one in Serbia.

The said data are implicative of the fact that there is a high degree of the Vojvodina-based wheat and corn production concentration. Comparative natural conditions and soil fertility are crucial factors having an impact on the degree of the marketability, volume of production and yields of wheat and corn in Serbia.

The cluster analysis of the production of wheat and corn in Serbia

The ranking of the wheat and corn production districts according to the three groups of characteristics (land capacities, production and the level of development) was conducted by calculating the value of Ivanović's distance (the I-distance) for each group of the observed characteristics. Beginning with the fact that the x2 characteristic – the share of plough-fields and gardened areas in arable areas – is the most significant for the land capacities characteristics group, x12 – the production of corn in tons – for the production characteristics group, and x14 – NI/capita – for the development level characteristics group, and applying the I-distance, we obtain the rank of the district according to the analyzed groups of characteristics accounted for in Table 3.

On the basis of Pearson correlation coefficients [8] a fact was established that the highest interdependence is between land capacities and wheat and corn production, while lower interdependences are those between land capacities and NI/capita, on the one hand, and production and NI/capita, on the other.

8 The interdependence of the characteristics is presented by the following simple correlation coefficients: the share of arable areas/wheat production=0.74066; the share of arable areas/corn production=0.77329; the share of arable areas/NI per capita=0.54792; wheat production/NI per capita=0.50984; corn production/NI per capita=0.54167.

Table 3. Serbia's districts ranked according to the I-distance

Districts	Land capacities characteristics		Production characteristics		Development level characteristics	
	Rank	I-distance	Rank	I-distance	Rank	I-distance
Middle Banat district	1	8.725139	5	2.43352	14	3.1480206
Nišava district	2	8.318207	19	0.36659	22	1.7062749
Jablanica district	3	8.147144	21	0.26158	25	1.2822662
West Bačka district	4	8.125168	4	2.46210	2	5.7529503
Toplica district	5	8.103151	20	0.29962	17	2.6969238
South Bačka district	6	7.808574	6	1.61212	3	5.3628713
Bor district	7	7.550212	16	0.42299	23	1.6602400
Zaječar district	8	7.422552	18	0.37977	19	2.2478261
North Bačka district	9	7.337999	1	4.38477	8	4.3715092
Srem district	10	6.710838	3	2.67103	11	3.9550674
Pirot district	11	6.646724	23	0.08547	16	3.0682153
North Banat district	12	6.615866	8	1.06261	5	5.0902642
Braničevo district	13	6.415211	11	0.82677	24	1.6340842
Šumadija district	14	6.035178	12	0.71282	10	3.9638245
Belgrade-City district	15	5.763625	15	0.43347	1	8.3013425
South Banat district	16	5.561612	2	3.04592	12	3.5689450
Danube district	17	5.340989	7	1.51235	13	3.2734715
Rasina district	18	5.082056	13	0.65420	15	3.0906051
Mačva district	19	5.043823	10	0.97339	21	1.8671706
Pčinja district	20	4.819132	24	0.04006	20	2.0625844
Morava district	21	4.220196	9	1.04878	7	4.6400077
Kolubara district	22	4.081857	14	0.51561	18	2.4864300
Moravica district	23	2.323572	17	0.39704	4	5.2486455
Raška district	24	1.679082	22	0.11322	6	4.6723868
Zlatibor district	25	0.224578	25	0.02729	9	4.2538279

On the basis of the rank of the districts according to the I-distance, there are two tendencies. First, the five districts of Central Serbia (Nišava, Jablanica, Toplica, Zaječar and Pirot districts), although belonging to the high rank (1-11) of available land capacities, realize the low volume of wheat and corn production (Ranks 19-23) and belong to the low rank (16-25) of the development level. Contrary to them, the second three districts in Vojvodina (North Bačka, Srem and South Banat districts) are highly ranked (1-3) from the standpoint of the production characteristics, although they are of the low land capacities characteristics rank (Ranks 9-16) and at the average level of the development characteristics (Ranks 8-12). Apart from their available land capacities, the mentioned

districts of the south-eastern part of Central Serbia have a low volume of wheat and corn production because of unfavorable comparative natural conditions for their production. Differently from them, the districts in Vojvodina have comparative natural conditions for the production of wheat and corn, so, even though they have a lower rank when available land capacities are concerned, they have a high production volume rank. Simultaneously, other crop cultures [9] have a high share in the structure of plough-fields areas in the mentioned districts in Vojvodina.

According to the development level characteristics, the districts belonging to Ranks 1-5 (Belgrade-City, West Bačka, South Bačka, Moravica and North Banat districts) are in Vojvodina, except for Belgrade-City and the Moravica districts. Vojvodina's districts are highly ranked when the land capacities (Ranks 4, 6 and 12) and production characteristics (Ranks 4, 6 and 8) are concerned.

On the dendrogram (Chart 2), 3 clusters (groups) of districts producing wheat and corn in Serbia can be identified. The first cluster includes 4 districts, the third cluster includes 5, and the second cluster includes the largest number of districts – 16 districts classified into three sub-clusters (the first cluster – 5, the second cluster – 6 and the third cluster – 5 districts).

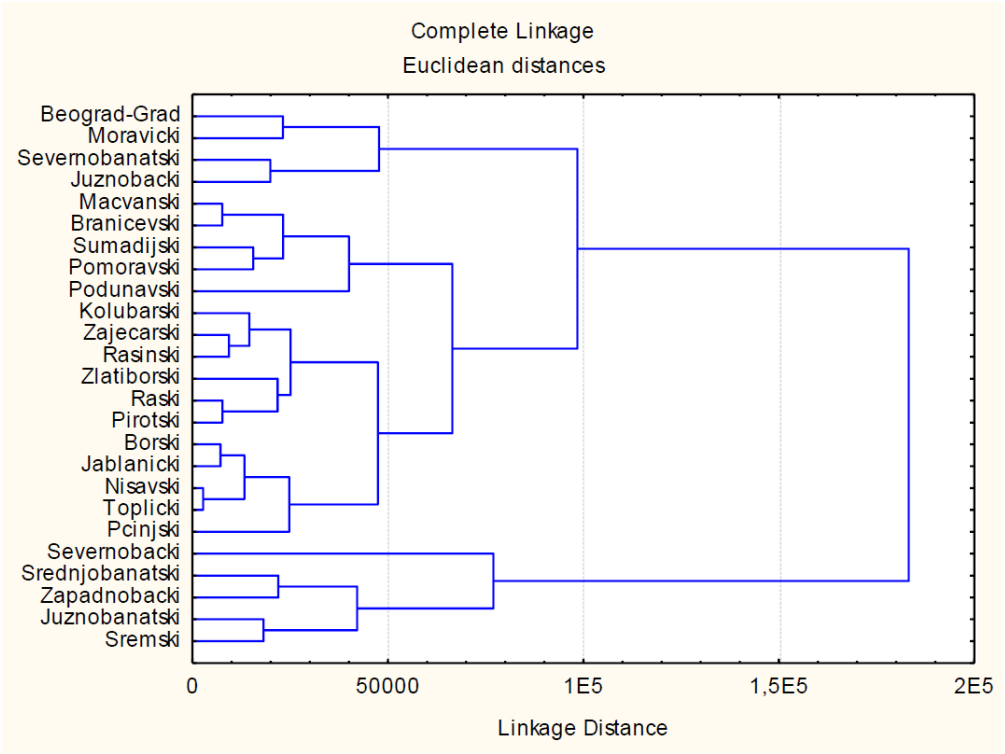
The first cluster includes 2 districts from Central Serbia (Belgrade-City and Moravica districts) and 2 from Vojvodina (North Banat and South Bačka districts). The districts of this cluster belong to the most developed (characteristics x_{14}-x_{17}) regions in Serbia (Belgrade-City district Rank 1, South Bačka district Rank 3, Moravica district Rank 4 and North Banat district Rank 5) with a low percentage of the share of agriculture in the NI structure and, with Belgrade as an exception, a relatively high percentage of agricultural population in the total population. According to available land resources (characteristics x_1-x_5), the districts in Vojvodina are more highly ranked if compared with the districts in Central Serbia. Namely, the districts of South Bačka and North Banat belong to Ranks 6 and 12, while Belgrade-City and Moravica districts belong to Ranks 15 and 23. According to the characteristics of the production (characteristics x_6-x_{13}) of wheat and corn, South Bačka and North Banat districts belong to Ranks 6 and 8. These districts have a high degree of the marketability of the production of wheat and corn. According to the production characteristics, Belgrade-City and Moravica districts belong to the second half of the district ranking list (Ranks 15 and 17).

The second cluster includes the largest number of districts (sixteen districts) in Central Serbia, classified into three sub-clusters. The first sub-cluster includes five districts (Mačva, Braničevo, Šumadija, Morava and Danube districts), the second one – six districts (Kolubara, Zaječar, Rasina, Zlatibor, Raška and Pirot districts), and the third one – five districts (Bor, Jablanica, Nišava, Toplica and Pčinja districts). ***The first sub-clusteris (pk1)*** characterized by a low share (Ranks 10-24)of areas under wheat and a high share (Ranks 1-10, except for Šumadija district Rank 16) of areas under corn in the structure of areas under cereals. According to the degree of the market production of wheat and

9 Sugar-beet, sunflower, oil rape, soya and so on.

corn, they are within ranks 8-17 and 9-14, respectively. Braničevo district is the most developed [10] (Rank 16) district in this cluster, with almost the biggest share of agriculture in the NI structure (Rank 2) and the percentage of agricultural population (Rank 1), whereas Šumadija district is the most developed (Rank 9) district of this sub-cluster. According to the land capacities characteristics, the districts of this sub-cluster are ranked from 13-Braničevo district to 21-Morava district; according to the production characteristics, they are ranked from 7-Danube district to 12-Šumadija district; and according to the development level characteristics, they rank from 7-Morava district to 24-Braničevo district. ***The second sub-cluster is (pk2)*** characterized by the low rank of the land capacities characteristics (18-25), except for Zaječar district (Rank 8) and Pirot (Rank 11) district, then a low rank of the production characteristics (Ranks 18-25), with an exception of Rasina district (Rank 13) and Kolubara (Rank 14) district, as well as the low rank of the development characteristics (Ranks 15-19), except for Raška (Rank 6) and Zlatibor

Chart 2. A dendrogam of the production of wheat and corn as per districts in the Republic of Serbia



(Rank 9) districts. Zaječar (Rank 4) and Pirot (Rank 5) districts have a high share of areas under wheat, while Kolubara (Rank 5) district has a high share of areas under corn in the structure of cereals. The marketability of the production of wheat and corn of this sub-cluster is ranked 16-25 and 15-24, respectively. According to the NI/capita, Zlatibor

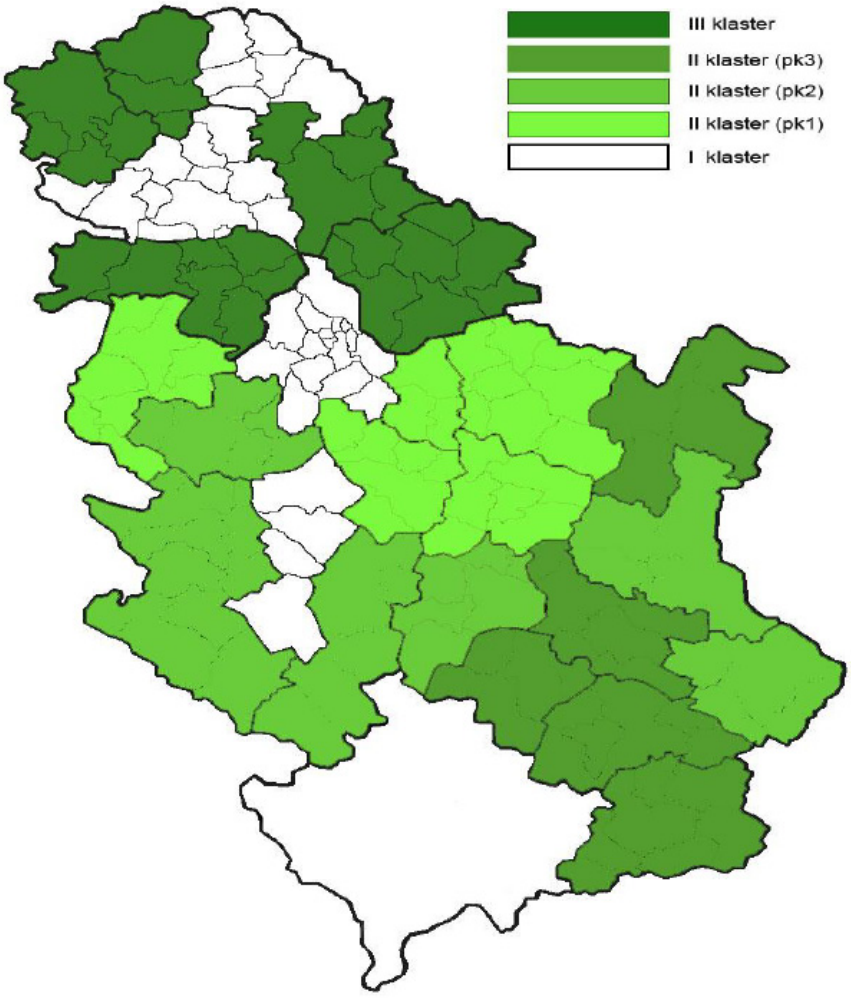
10 According to the amount of NI/capita

district is the most developed district (Rank 12), whereas Pirot district is the most undeveloped (Rank 20) district of this cluster, with a high (Rank 6) share of agriculture in the structure of the NI of the economy and a high (Rank 2) percentage of agricultural population in the total population. ***The third sub-cluster (pk3)*** is characterized by a high share of areas under wheat (Ranks 1-6), except for Pčinja district (Rank 11), and a low share of areas under corn (Ranks 19-25) in the structure of areas under cereals. Apart from Pčinja district (Rank 20), the districts of this sub-cluster belong to Ranks 2-7 according to the land capacities characteristics, and according to the production characteristics they are ranked between 16-Bor district and 24-Pčinjadistrict. The similar situation is with the development level characteristics, where they are ranked from 17-Toplicadistrict to 25-Jablanicadistrict. The degree of the marketability of the production of wheat and corn belongs to Ranks 8-17. According to the amount of the NI/capita, the districts of this sub-cluster are the most undeveloped in Serbia and belong to Ranks 21-25, having a high share of agriculture in the structure of the NI (Ranks 18-22, with the exception of Pčinja-10 and Toplica-12 districts) and the structure of agricultural population (Ranks 15-20, except for Bor district Rank 4 and Toplica district Rank 7) in the total population.

The third cluster includes 5 districts of Vojvodina (North Bačka, West Bačka, Middle Banat, South Banat and Srem districts). These are typically agricultural districts with a very high share of arable (Ranks 1-4) areas in agricultural areas, with South Banat (Rank 10) and Middle Banat (Rank 18) districts as exceptions. North Bačka, Srem and South Banat districts are typically corn-oriented (Ranks 2, 4 and 9), whereas in Middle Banat district wheat (Rank 7) is more present in the structure of cereals if compared with corn (Rank 14). According to the land capacities characteristics, Middle Banat district belongs to Rank 1, and West Bačka district to Rank 4, whereas the other districts belong to Ranks 9-16. However, according to the wheat and corn production and degree of their marketability characteristics (the characteristics x6-x13), these districts are top ranked (Ranks 1-5). Bačka districts (West Bačka and North Bačka districts) are more developed (Ranks 2 and 4) and have a relatively low share of agriculture in the structure of the NI (Ranks 8 and 16) and in the share of agricultural population in the total population (Ranks 5 and 11) as compared to Banat districts (Middle Banat and South Banat districts) which, according to the level of the NI per capita, belong to Ranks 7 and 8, according to the share of agriculture in the NI they belong to Ranks 23 and 28, and according to the share of agricultural population in the total population they are ranked 21 and 18.

So, even though North Bačka, Srem and South Banat districts have relatively lower ranks from the viewpoint of available land capacities (Ranks 9-16), the third cluster districts are still characterized by a high volume of wheat and corn production and a high degree of their marketability (Ranks 1-5). That is implicative of the fact that, in these districts, there are comparative advantages for the production of wheat and corn in comparison with some other districts of Central Serbia which, apart from the highly-ranked land capacities characteristics, still have a lower rank of the production characteristics.

Cartogram 1. Clusters of the production of wheat and corn in Serbia



The mentioned regional differences from the standpoint of land capacities, the volume of production and the development level have an influence on the presence of cattle production, too, especially pig-breeding, traditionally connected with corn production. The relatively low corn production marketability is connected with the fact that, to a great extent, corn is used as animal feed on rural estates. For that reason, the marketability of corn production can here be observed indirectly via cattle breeding and meat production. Given this fact, it is possible to consider two forms of the marketability of corn production when it is analyzed: first, there is direct marketability achieved through the market realization of corn, and second, indirect marketability achieved through the marketability of cattle products (Stevanović, 2002:287).

Conclusion

Wheat and corn are the most widespread crop productions present in all districts in Serbia. Even though they are present to a great extent, there is still reduction in areas under wheat and corn, which is an expected and positive tendency. However, yields per ha are unjustifiably low and are significantly smaller in comparison with yields in developed countries. By increasing the volume of production, accompanied by changes in economic development, the degree of the marketability of wheat and corn also increases. The increase in marketability is the result of the relocation of production from smaller to bigger estates and regions with more favorable natural conditions, which represents the regional allocation and specialization of these productions. That has a two-fold effect: on the one hand, it positively impacts the producer's profit, and, on the other, it impacts rural poverty reduction. If we have in view the fact that there is increased demand in the world, then there is no justification for negative tendencies in the production of wheat and corn in Serbia.

In Serbia, there are two groups of districts of the producers of wheat and corn. The first is the group of undeveloped districts belonging to a high rank of the land capacities characteristics but achieving a low volume of wheat and corn production, and the second one, the group of relatively developed districts achieving a high level of production volume although they have a low rank of the land capacities characteristics. The districts in the first group are located in South-East Serbia, whereas those in the second group are mainly located in Vojvodina, and, in comparison with Central Serbia's districts, have comparative natural conditions for the production of wheat and corn.

Changes made during the transition process all the more justify the researching of this theme intended to gain an insight into the possibilities, directions and manners of a faster development of agriculture in a market ambience. The development of market production provides preconditions for the accelerated economic progress of Serbia's economy.

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RAZVOJ TRŽIŠNE PROIZVODNJE ŽITA U SRBIJI: PRIMER PŠENICE I KUKURUZA[11]

Simo Stevanović [12], Milutin Đorović [12], Milan Milanović [13]

Rezime

U radu su istraživane tendencije u razvoju proizvodnje pšenice i kukuruza u period od 1976. do 2010. godine, sa težištem na klaster analizi tržišne proizvodnje ovih proizvoda po okruzima u Srbiji 2009. godine. Na osnovu važnijih obeležja raspoloživih zemljišnih kapaciteta, obima proizvodnje i privredne razvijenosti, metodom I – odstojanja izvršeno je rangiranje okruga. Rangiranje okruga prema analiziranim obeležjima izvršeno je na osnovu medijalne vrednosti podataka po opštinama. Za svako od navedenih grupa obeležja, I-odstojanjem izvšeno je rangiranje okruga od 1-25, pričemu je rang 1 najbolji, a rang 25 naj lošiji. Sličnosti okruga prema analiziranim obeležjima predstavljene su metodom kompletnog povezivanja hijarhijske klaster analize, a rezultati su predstavljeni dendrogramom i kartogramom.

Pored povoljnih uslova (zemljišnih, klimatskih, itd.), tradicionalne navike proizvođača unajvećoj meri su uticali na neopravdano visoku zastupljenost pšenice i kukuruza u strukturi ratarske proizvodnje. To je, uvelikoj meri, uticalo i na visoku tržišnost proizvodnje pšenice i kukuruza u Srbiji.

Ključne reči: *tržišna proizvodnja, pšenica, kukuruz, I-odstojanje, klaster analiza.*

11 Rad predstavlja deo istraživanja na projektu „Ruralno tržište rada i ruralna ekonomija Srbije- diverzifikacija dohotka i smanjenje siromaštva“, br. ON179028, koji u periodu 2011-2014 godine finansira MNTR Vlade Republik Srbije.

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SUSTAINABLE AGRICULTURE POLICY IN SUPPORT OF FARMERS' COOPERATIVE SYSTEM

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Summary

There is a rapidly expanding body of work which describes what needs to be done by business to help build a sustainable economy. This is generated by government, civil society and by business itself. However, there is a separation between what is expected of the sector, what is being achieved by individual companies and what business says in public about the future. There is also a review of the literature providing key principles of sustainable agriculture. Sustainable agriculture is a way of raising food that is healthy for consumers and animals, does not harm the environment, is humane for workers, respects animals, provides a fair wage to the farmer, and supports and enhances rural communities. Yet movements toward a sustainable agriculture is currently fragmented and without clear direction. This paper aims to explore this relationship between what has been identified as the role of governoment and cooperatives in building a sustainable economy and the current situation. With exploratory research this paper attempted to stimulate debate about contemporary sustainability challengesits legal and policy framework. The final aim of this paper is to deal with the challenge of putting "evidence-based policy-making" and on how private sector can support evidence-based policy action.

Key words: *sustainability, sustainable agriculture, cooperatives, development*

JEL: *Q12, Q 32, Q 57*

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Introduction

If businesses do not have complete control over markets in preserving or destroying today and tomorrow's human and natural resources, then they do have a great influence on them. Business therefore has a burgeoning role in creating a sustainable economy. A common definition of 'the economy' is, seemingly, straightforward: 'a system of production, distribution and consumption' (Wordnet, 2010) yet business' impacts on and the motivations within it are most certainly not.

A great transition is required from 'business as usual' to creating a world economy that works towards rather than against a long-term sustainable future. It requires radical mindset and practical changes within a business. For this reason, this paper homes in on the following:

- How does the way cooperative leader understand the task match what is really needed for sustainable cooperative business and the cooperative sector of the agro-economy?
- What kind of significant policy changes should be recommended for bridging the gap between the ideal and the reality?

In rising to the challenges that are presented, we aim to review the achievements and the shortfalls of those at the forefront of pro-sustainability business thinking. Our goal is to steer their course a little nearer towards a sustainable economy in the present, for the future and in the future.

Research methodology

This section outlines how we have approached the research required to answer the question posed in this paper. An initial review of literature, including business reporting and academic and practitioner research, was carried out to provide the hermeneutical frameworks to support our research and its subsequent analysis. In particular, this review helped us to envision a sustainable economy and so judge the distance between it and the prevalent global economic model of today.

The 'sustainability economy' is a hot topic. Material published that specifically addresses the role of business in a sustainable future is growing rapidly. If we had been undertaking this research last year at least three of the central documents which have helped to shed light on the topic would not have been available.

The research is based on the "mixed method", using quantitative methods to ensure accurate and confidential data through qualitative ideas and conclusions.

Three approaches have been used for that purpose:

Firstly, the research integrated findings of the "Sustainable Development of The Farmers' Cooperative System in AP Vojvodina" (Sevarlic, Raicevic, Glomazic, 2012) research.

Secondly, by means of interviews, the following pieces of information are collected, especially those about the visions of cooperatives, their strategies on and activities in the promotion and application of sustainability now and in future. Both the primary and the secondary researches are set using, first of all, the following sources: Accenturov '2010 UN Global Compact Survey' (UNGC. 2010), the Economist's research (Economist Intelligence Unit. 2007) and 'McKinsey and Company' (Oppenheim et al. 2007). The sources have been selected to ensure the basic materials for covering socio-economic and ecological sustainability, on the one hand, and to provide a more detailed review of the business strategy and business performance, on the other. On the basis of that, gaining a holistic insight into the subject of the research is enabled.

Thirdly, by means of a comparative analysis of all the mentioned, we have confirmed the assumptions of the socio-economic, legal and ecological sustainability of the farmers' cooperative system in Serbia's agro-economy.

Fourthly the collected primary and secondary data, were analyzed by means of descriptive statistics, the assessment of sustainability in business operations based on the values, strategy and business priorities of farmers' cooperatives in Serbia's agro-economy is made.

On the basis of our research findings we offered policy suggestions that can advance the development of sustainable Agriculture policy development in support of farmers' cooperative system.

Shrinking the gap towards a sustainable economy

In this section, an appropriate definition and a structure directing towards our research are chosen. On the basis of them, we can ask ourselves where the cooperative sector of Serbia's agro-economy is, where it should be and for what reasons cooperative business has an essential role in considering the questions of the sustainability of agro-economy and rural areas.

What does sustainability mean? Today, expressions containing common characteristics, descriptions, relations and, most frequently, temporal determinants are frequently used. Their authors indicate the preservation of human and natural resources, describing their internal relations and the balance between them now and in future (Brundtland, 1987 and CPSL, 2007), "Association of Certified Chartered Accountants" (2010) and "World Business Council for Sustainable Development" (2010). Out of these definitions, the definition contained in the "Dialogue on Economic Sustainability" in the Cambridge Programme for Sustainability Leadership) is the most appropriate one for our research. The definition contains an explanation which concisely describes the balance necessary for a "good economy": "The basic purpose of a good economy is to constantly enhance the welfare of all people now and in future, respecting rightfulness, nature's restraints, through an active engagement of all participants" (CPSL, 2007). This attitude also calls for a full engagement of the society, including the Government, the economy and citizens' associations.

The given definition can set a task to the human race. In any case, sustainable models, not only definitions, are necessary for setting up a system and direction of an action. When companies are concerned, models such as the Elkington Triple Bottom Line (Elkington, 1997; TBL) and the five types of capital of the Forum for the Future (Porritt, 2009) offer an additional framework for the natural business understanding of their managerial obligations. The TBL is especially suitable for our research because it offers a possibility of conducting an analysis, which means it can be applied to individual companies, activities and sectors, even to the economy as a whole.

Is the current economic model sustainable? Today's predominant economic model does not promote a sustainable future, neither social nor economic, nor the one in the field of the protection of the living environment. The model is still completely focused on the growth of the gross domestic product (GDP). Within this particular thesis, "success" and "progress" are related to the salary and growth achieved through exploiting human and natural resources. Little attention is paid to the ultimate quality. Therefore, the GDP is not an adequate measure for a sustainable economy. It values financial capital first, then the other capital values (Jackson, 2008). It makes us "blind" in relation to negative impacts when a "sound" financial check-up gives a clear account. A bad diagnosis can have fatal consequences. Take this case as an example: looking into the future, if the world financial model achieved permanent growth between the years 201 and 2050, we would need an economy 15 times as big as today's economy. That would be something to go far beyond nature's boundaries. In a funny manner, the New Economics Foundation (New Economics Foundation, 2010) compares the current instability of the commercial welfare with a hamster (human consumption) incessantly eating a quantity of food equal to its weight (the Planet's resources) and, thus, growing quickly. What is obvious is less funny: the wheel can keep revolving; however, the hamster can perish very soon. For that reason, Jackson (Jackson, 2009) warns us that, somehow, we must "separate" the concept of success and prosperity from expanding growth and greed.

Humankind has a universal responsibility to preserve the planet for future generations, distancing from highlighting finances, production and growth, short-term goals, the inequality of resources and other negative aspects. Humankind must act via the government, society and business circles with possibilities at its disposal.

What is the role of business in the development of a sustainable economy?

Starting with the fact that cooperative business, too, should be pro-active in the creation of a sustainable agro-economy and economy, we must ask ourselves the following questions: What function should cooperative business have? What priorities should cooperative business have? What should cooperative business change in its approach to these issues? Which business goals should cooperative business target in responding to these issues?

Going through our literature – the basic researches, it appeared clearly that there are practical definitions of sustainability which should accompany business in general,

and, therefore, cooperative business as well. However, companies in general lack of clear understanding of what "sustainability" means and which activities they should perform to access it.

All business firms should develop new capabilities, and those are numerous. In any case, the Boston Consulting Group (2009) describes a small number of the most significant and the most realistic ones. They include a possibility of acting systemically and through cooperating via internal and external boundaries; a cultural pattern that awards and encourages long-term contemplation; capabilities in the fields of active management, the restructuring process, financial modeling and reporting; and the skills of inclusion in and communication with external decision-makers (BCG, 2009).

The manner for companies to "establish relations" should be supported by trust and good communication. The well-known concept of secrecy should be replaced with trust. The business management and "know-how" must be available to supervision and dialogue. There will be no constant change unless trust is inserted into an organization's culture and system. Business circles should be working on laying trust and transparency into the culture of labor.

Through efficient communication, expectations can be met and progress can be made. Really, the UNGC also indicates that leaders are frequently seen as an educational power of business, which could be taken as true. The consumer and the investor in particular are not always well informed about sustainable alternatives to offer and a possible influence of these alternatives (UNGC, 2010).

A systemic change, especially the development of the system of values which the market functions on, should make up one part of the wish-list of a sustainable economy. Options for this should not completely be based on business circles; however, they can contribute to their examination and application. The examples include the influence of a decision-maker in the process of decision-making (Hart et al. 2009); including some or all "five capitals" in calculation and prediction (Stern, 2007) and (Stiglitz et al., 2009); and examining the reduction factors between the current and future profits (Pearce et al., 1989).

The review of the literature reveals that pro-sustainable business operations are indicative of the needed social, financial, political and culturological changes. They speak a language of enthusiasm and their language is rather pro-active. In any case, a statement made by Jeffry Sachs, advisor with the United Nations on the issues of the Millennium Development Goals, indicates that this is sometimes the case: "One can say that there is a certain lack of seriousness in the process from the very beginning" (Sashs, 2010). Seeing the role of business doing is based on the CSR reports, rules of behavior and will to take part in studies such as this one. Companies prove their progress through common forms of: transparent announcements, engaging different groups, partnering with societies for the improvement and protection of the living environment and communities they are located in, and so on. Companies stick to this faithfully in writing and in practice. For example, trading coal and oil derivatives bears responsibility to the

law, developing the market within legal restraints of pollution (Stern, 2007). Financial institutions also offer stocks and shares, for example: "Goldman Sachs" "Sustainability Index" monitors the added value in "sustainable" joint-stock houses. That enables banks to generate profits with the support of ethical factors (UNCG, 2010). Also, the largest part of business innovations remain based on governmental rules. The majority of pro-sustainable business circles do not provoke them, but use this issue in another manner or change the topic of conversation. They are reactive rather than proactive.

From the review of the literature, we could come to a conclusion that we need to redefine success and prosperity in the conditions of growth which will not be harmful to people and the planet:

- Long-term lasting – Business circles cannot only rely on the pressure imposed by the government or the society because they neither have a power nor long-term lasting to make long-term changes in the economy.
- Combining and integrating capital values – The "Triple Bottom Line" and "Five Capitals" have taught us that financial capital should be connected with yet another capital, or, otherwise, we shall not achieve the right goals when sustainability is concerned. The economic situation today is a painful reminder of what can go wrong if no attention is paid.
- Separation – The definition of success and prosperity must be separated from growth and consumption. We live with limited resources that can be unavailable for future generations.

The legal regulations and socially responsible behavior in Serbia

One of Serbia's key national priorities, whose fulfillment will, for the most part, enable the achievement of the vision of sustainable development, is the country's membership in the EU (Radičević, N., 2010). In order to achieve its basic strategic-political orientation – the inclusion in the European integration flows, accession to and, then, joining the EU, Serbia must fulfill a series of complex and interrelated conditions formulated by the EU ("The Official Gazette of the Republic of Serbia" No. 57/2008):

- the development of stable institutions guaranteeing democracy, the rule of law and respecting and protecting human rights and the rights of minorities;
- the development of a market economy capable of facing the pressure of the competition inside the EU; and
- the alignment with the EU legal attainments and taking over responsibilities arising from membership.

The adoption of acts of law and decrees for the transfer of the EU law into the Serbian legislation is an obligation of the republican authorities and all activities from within this particular field are performed via the National Program of the Integration of Serbia

into the EU (NPI[4]). The NPI was adopted in the year 2008, and, from year to year, it has been revised so as to monitor the complying of new regulations adopted by EU in the meantime.

This is very significant from the aspect of the goals of Agenda 21[5], as well, because by the further complying of the development of strategies with this document, the awareness of the local public regarding issues of sustainable development is raised to a higher level. Programs, policies and local regulations intended for attaining Agenda 21 goals are assessed and modified according to local programs (Local Agenda 21). The strategy undergoes complying with Agenda 21 in order to enable the support of the international financial instruments, which is very important for the economy of Serbia (Stojić Karanović, 2007).

The application of the legislation adopted in such a manner does not have to be only the central authorities' competence; a significant responsibility can also be demanded from regional and local authorities when the achievement of the EU policy goals is concerned. Therefore, it is important that the province's and local administrative capacities be ensured, as well as the infrastructure and budgetary means necessary for the decentralized implementation of regulations from within the field of the protection of the living environment, sustainable management of natural resources, and adaptation to climate changes (Matić, P., Mirović, A., 2011). A conclusion can be drawn that an effective implementation of legal regulations does not only depend on the central authorities but also on the authorities at other levels.

While observing Serbia as an EU non-member country, the negative obligation is related to certain provisions of the Agreement of Stabilization and Joining (the SSP agreement) and the Transitional Agreement of Trade (the PTS agreement), which establish the nondiscriminatory treatment of the EU citizens in comparison with the citizens of Serbia (the right of business residence, employment, service provision and so on), or to obligations regarding the protection of the competition, i.e. putting a ban on the state aid, by which the competition is distorted and trade between Serbia and the EU disturbed. So, it is all about the negative obligation of compliance, i.e. the obligation to eliminate all hurdles and restrain from introducing new ones which would infringe certain rights established by the SSP agreement, i.e. the obligations undertaken by the PTS agreement (Jelisavac, S. 2009).

The rules stipulated by the SSP and PTS agreements bind AP Vojvodina's organs, too, as well as all local self-governments in Serbia, so they must not adopt regulations

4 The NPI precisely stipulates how to achieve all the criteria necessary for the state to become the EU member country, ranging from political and economic to the most detailed standards present in the EU in the fields of trade, agriculture, the protection of the living environment, infrastructure and so on.

5 Agenda 21 is the plan of actions, i.e. generally accepted principles of sustainable development agreed upon by the governments of 182 countries at the summit session on The Earth held in Rio de Janeiro in 1992.

nor are they allowed to take measures from within their own or assigned competence which are contrary to those obligations which Serbia has undertaken to fulfill by these international agreements. These organs must give priority to the provisions of the SSP and PTS agreements when implementing the laws, decree-level acts and general acts which they adopt themselves if they are contrary to the above mentioned agreements.

The Serbian Government adopted the National Strategy of Sustainable Development (the NSOR strategy, "The Official Gazette of the Republic of Serbia" No. 57/2008), after which it started preparing the Action Plan (AP) for the implementation of the NSOR. The Action Plan was adopted in 2009 ("The Official Gazette of the Republic of Serbia" No. 22/2009).

Serbia's vision in the next five-year time period (2012-2017, the NSOR strategy, 2008) is an institutionally, economically and infrastructurally developed country, compatible with the EU standards, having such an economy based on knowledge, efficiently exploited natural and created resources, greater efficiency and higher productivity, a preserved living environment, a historical and cultural heritage, where there is a partnership of the public, private and civil sectors, as equal opportunities for all citizens. In tune with the vision, adequate priorities have also been defined in compliance with the NSOR strategy (Nadić, D., Šuvaković, U., 2011).

Aimed at increasing and enhancing socially-responsible business doing in Serbia, and within the Ministry of Labor and Social Policy, together with social partners as associated members, the Government commenced the preparation of the National Strategy (of the Agenda) of the Republic of Serbia on Socially Responsible Business Doing.

The social dialogue should be the basic postulate to start with when solving economic, business and social issues, at the regional level and in all forms of territorial organizing (Olsen, Torun, 2003). It is needed that there are several levels of the social dialogue. The fundamental dialogue is the one conducted within the scope of the work performed by the Social-Economic Council of the Republic of Serbia. Also, social-economic councils at the level of AP Vojvodina and the region must also be established. The network social-economic councils, as the key institutions, should help reach an agreement between the local government, employers and unions, all aimed at increasing the competitiveness of the economy, affirming social rights, increasing standards of the employed, preserving the existing jobs and opening new ones. Through the social dialogue, permanent solutions to further labor engagement of the employed must be generated by creating a necessary social ambience for enterprises (and cooperatives) to operate, the preservation of the existing jobs and opening new ones and the reduction in the number of workers whose subsistence is related to the labor market (Ghai, D., 2002).

The social dialogue must be founded on the MOR conventions on unions' freedoms and the protection of union rights, the rights of organizing and collective negotiations related to the application of the principles of the right of organizing and collective agreement-making (Compston, H., 1997). The essence and spirit of the European

Union's Charter of the worker's fundamental rights and Charter of the fundamental humanitarian rights as well as Revised European Social Charter must be paid respect to. The agreement concluded between the employer and the union must be a social standard and one of the prerequisites for an enterprise's normal functioning (Gernigon, Bernard, Odero, Alberto and Guido, Horacio, 2000).

With an aim to improve socially-responsible business doing in Serbia, it is necessary, inter alia, that attention be paid to innovative development in the fields of industry, technology and services because, putting *the* aspect of development aside, it is hardly possible to achieve the wanted dynamics of economic progress, or develop democratic, legal, economic, social and cultural institutions representing the foundation which the awareness of a socially-responsible behavior lies on, or upgrade the nomenclature prepared by the Chamber of Commerce and other business associations.

In the field of the development of agriculture and the farmers' cooperative system in the Republic of Serbia, particularly in the context of its harmonization with the European Union's legislation, the Strategy of the Development of Serbia's Agriculture ("The Official Gazette of the Republic of Serbia", no. 78/2005), the Act on Agriculture and Rural Development ("The Official Gazette of the Republic of Serbia", no. 41/2009), the National Program for Agriculture from 2010 to 2013 ("The Official Gazette of the Republic of Serbia", no. 83/2010) and the National Program of Rural Development from 2010 to 2013 ("The Official Gazette of the Republic of Serbia", no. 15/2011) were adopted. It is particularly important that we should highlight the fact that there is a public debate currently performed regarding the proposal for the Strategy of the Development of the Farmers' Cooperative System in the Republic of Serbia, which, apart from the defined vision, mission and goals of the development of the farmers' cooperative system, contains a special chapter elaborating the farmers' cooperative system as the generator of a sustainable economic, social, cultural and ecological development of rural areas (Ševarlić, M.M., Zakić, Zorka, 2011).

Research

In this section of the paper, we account for the results of the research we have conducted in the selected farmers' cooperatives in Serbia's agro-economy, presenting the frameworks of sustainability on the basis of the statements produced by their respective directors and comparing them with what business firms should generally dedicate their efforts to in order to ensure sustainable development.

Once we have defined the core goals of a sustainable economy for the future and recognized the current economic restraints on the way towards it, on the basis of the results of the research (Table 1), we have assessed the fundamental activities carried out by the farmers' cooperatives which can make a contribution to a sustainable agro-economy and economy of AP Vojvodina and the Republic of Serbia.

Research Findings

Having defined the essential objectives of a sustainable economy for the future and identified the current economy gaps in arriving there, we assessed the fundamental actions that could contribute to a good economy. In our research we concentrated on benchmarking selected Cooperatives' current activities with key actions suggested in the "Sustainable Development of The Farmers' Cooperative System in AP Vojvodina" (Sevarlic, Raicevic, Glomazic, 2012) research. Following are the key research outcomes important for policy and decision-making in support of Sustainable Agriculture:

Education - Education is a global issue seen as the fundamental element of the development of a sustainable economy.

The Government - The role played by the government in designing an appropriate framework and polices is predominant for the development of a sustainable farmers' cooperative system as a special ownership sector in the Serbian ago-economy and its entire economy.

Long-term strategic planning - *S*ustainability of the farmers' cooperatives in AP Vojvodina is closely connected with the long-term planning of long-term investments and believe that it can have an impact on the reputation of cooperatives and the positioning of their commodity brand, which would contribute to an increase in the sustainable production of goods for these reasons.

Rightfulness - When "enterprises" belonging to the cooperative sector – which is the usual terminology for cooperatives in European countries and the world, international declarations provide each one of the "five capitals" with the basis for accession to rightfulness.

Responsibility - Humans, the planet and profits must be balanced with each other. Economic subjects understand that there is an urgent need for an efficient approach to the concept of the Triple Bottom Line.

Motivation - Cooperatives value the existence of clear rules and stimuli in order to include sustainability in their performances.

The outer side - New forms of reporting are significant in the creation of an economic model inclusive of all possible influences on the performance of farmers' cooperatives as a form of social entrepreneurship in rural areas.

Purpose - Sustainability will only be achieved through a common vision of all participants in the society.

Values - Sustainability cannot be the only one theme. Those farmers' cooperatives which stick to the principle of sustainability must include the principle in their respective strategies and activities in order to stimulate the development of an economic model of sustainability.

Measuring - Sustainability indicators are of essential importance for the valuation of business activities and the creation of a valid sustainability index.

Conclusions and policy advice

Several key issues arise from "Sustainable Development of The Farmers' Cooperative System in AP Vojvodina" (Sevarlic, Raicevic, Glomazic, 2012) research that frame the role of local and central governoment and supporting policy. Among the most important are:

Alongside with technological education, it is necessary to raise the education level of members of cooperatives for the social and ecological sustainability of their households and farming estates and their local communities. It is also necessary to raise awareness regarding establishing cooperation for one of the following purposes: joint organization of higher-level processing and production of economically more valuable products, or production of fresh organic products and product branding and placement for commercial purposes. It is also necessary to increase education and information levels regarding international cooperative values and principles. Special attention should be paid to the education of cooperative leaders and managers for financial business, marketing and auditing in cooperatives, as special organizations showing both principles of the organization of capital (business component) and principles of the organization of people/ members (social component). Given the dominance of small and micro- cooperatives, it is necessary for all groups of participants in the work of cooperatives to be educated about the importance of joining smaller cooperatives into bigger associations of cooperatives for purposes of enlargement and thus becoming entitled to benefits regarding the purchase of resources. Associations of cooperatives also trigger increased visibility and recognition of cooperative's products in the market, as well as increased market share in local, regional and national markets. In cases when specialized national cooperatives are formed, we can also speak about the significance of entering international markets.

Countries should provide at least equal economic positions for cooperatives as for other agro-economic participants (farms and companies), which has not been the case in Serbia until the present day. It is also important to deal with the question of unresolved property affairs in the business of cooperatives in Serbia, so that the owners of capital which is still classified as state assets and undistributed cooperation assets could get transformed into cooperatives and cooperative members. Furthermore, members of cooperative associations should become the co-owners of assets belonging to those cooperative associations. It is necessary to harmonize the legislation related to cooperatives with the regulations which exist in the European Union, in order to provide the financial incentives for special programs of further education and training for cooperative managers within the country and abroad and provide additional financial resources for their salaries during the first or first two years after the founding of new cooperatives. What is more, it is necessary to promote credit and saving cooperatives, as well as consumer cooperatives, so as to provide more favorable financial resources for production credit schemes and investments in production. On the other hand, consumer cooperatives are important in terms of avoiding unnecessary intermediaries and improving the economic position both of producers and of consumers. Serbia should strengthen the process of joining cooperative associations from different sectors

into the general cooperative organization/association of Serbia and promote and stimulate their participation in the European association of cooperatives, as well as the International cooperative association.

It is necessary to adopt the already prepared draft strategy for the development of agricultural cooperatives in Serbia and this refers both to cooperative associations and the State. Furthermore, it is necessary to formalize the establishment of specialized cooperatives and their joining into the national cooperative association, since this is the easier and better way to tackle the challenges and problems from the same field or production area, than it is the case with general type of cooperatives. It is also important to enable partnerships between cooperatives and the public, especially for purposes connected with financing the building of regional purchase, processing and distribution centers of agricultural and food products within the cooperative sector.

What is more, we need to provide adequate conditions for consistent cooperative management by members of cooperatives as cooperative owners and regular auditing of cooperatives with the possibility to exclude cooperatives from cooperative associations if they do not accept cooperative auditing. The cooperative association of Serbia, as well as cooperative sectors should to a greater degree use the consulting services of international organizations and institutions, for purposes of solving problems within the cooperative sector and also problems which may appear between cooperatives and the State.

Economic effects of doing business through cooperatives should be the main motivation for all this. There has to be a visible and obvious interest in joining cooperatives, in terms of being attached to a cooperative and participating in the mandatory division of part of the profit among cooperative members at the end of the year, according to certain criteria: the amount of membership fee and value of purchasing resources on the one hand, and value of product placement through cooperatives- on the other hand. All this includes the regular amounts of money put into special funds for cooperative members' social needs and activities helping cooperatives to establish and develop the image of socially responsible organizations which participate in the development of local communities.

Each cooperative should also offer significant support to young cooperative affiliations and women cooperatives, as well as national minorities' cooperatives and special social groups' cooperatives. Furthermore, the biggest contribution in times of economic crisis can be made by cooperatives in terms of keeping the existing and increasing the number of employed workers, managing agricultural and food supplies and purchases without intermediaries for children's homes, retirement centers and homes, childcare and pre-school institutions and hospitals.

Cooperatives have always been and will continue to be common enterprises with soul, stimulating economic, social, cultural and ecologically sustainable development of cooperative members' farms, local communities and the state in which those cooperatives exist, operate and develop. By doing business through cooperatives, the influence of grey economy and corruption are significantly reduced, and developmental problems of local communities are dealt with and resolved in a much more efficient way.

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POLITIKA ODRŽIVE POLJOPRIVREDE KAO PODRŠKA SISTEMU ZEMLJORADNIČKOG ZADRUGARSTVA

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Rezime

Postoji konstantno povećavajući korpus radova koji opisuju aktivnosti koje treba da biznis kompanije preduzmu kako bi se izgradila održiva ekonomija. Ovo se ostvaruje delovanjem vlade, civilnog društva i samih biznis kompanija. Međutim, postoji linija razdvajanja između onoga što se očekuje od sektora, šta treba da urade pojedinačne kompanije i onoga što firme u javnosti izjavljuju kada je budućnost u pitanju. Korištena literatura obuhvata ključne principe za razvoj održive poljoprivrede. Održiva poljoprivreda je način proizvodnje hrane koja je zdrava za potrošače i životinje, ne šteti životnoj sredini i humana je za radnike, poštuje dobrobit životinje, obezbeđuje adekvatnu novčanu dobit poljoprivrednicima, a takođe podržava i pospešuje razvoj ruralnih zajednica. Pa ipak, promene u pravcu razvoja održive poljoprivrede trenutno su sporadične i bez jasnog usmerenja. Ovaj rad ima za cilj da istraži odnos između onoga što je prepoznato kao uloga države i zadruga u procesu izgradnje održive ekonomije i trenutne situacije. Svojim istraživačkim delom, ovaj rad pokušava da podstakne diskusiju o aktuelnim izazovima u smislu pojma održivosti i održivog razvoja i političkog i pravnog okruženja. Krajnji cilj ovog rada jeste da se pozabavi izazovom „donošenja politike bazirane na dokazima", kao i da istraži načine na koje privatni sektor može da podrži političke aktivnosti bazirane na dokazima.

Ključne reči: *održivost, održiva poljoprivreda, zadrugarstvo, razvoj*

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COMPARISON OF ECONOMIC CHARACTERISTICS OF PORKERS OF MANGALITSA AND YORKSHIRE RACE[1]

Vladislav Zekić, Vladimir Tomović, Dragan Milić, Dragomir Lukač [2]

Summary

The aim of study was to compare the economic characteristics of production of porkers Mangalitsa and Yorkshire race. The observed productions should provide the raw material for the production of traditional fermented sausages, or specific products with protected origin. According to this a calculation is derived with the total cost of fattening pigs Mangalitsa and Yorkshire race to the slaughter weight of 132 pounds under the conditions of modern farm housing system. The above calculation includes the cost of materials, the cost of energy and external services, salary costs and amortization of facilities and equipment used. In this way we can get to the total costs of finishing of pigs produced per kilogram of live weight without the overhead costs. The costs are calculated as described above for Yorkshire race and it is 120.88 RSD/kg or 1.26 €/ kg and it is lower than the current purchase price in the market. On the other hand the costs of finishing Mangalitsa race are significantly higher than the purchase price of pigs bred races and it is 245.19 RSD/kg or 2.13 €/kg, which is caused by a slow weight gain and inefficient feed conversion compared to the refined race.

Key words: *pig farming, Yorkshire, Mangalitsa, costs*

JEL: *O13, Q12*

Introduction

Pig farming in Serbia is based on the use of the latest achievements in biotechnology and the use of highly specialized breeds of pigs (Vidović et al., 2011). This production has a long tradition. During the 19th century, pigs were the main export product of Serbia. Then the pig

1 These results are part of the project no. 114-451-2091/2011 (Improvement of meat quality from indigenous and modern pig breeds produced in Vojvodina for the production of traditional dry fermented sausages and dry cured meat products). Research was financially supported by the Provincial Secretariat for Science and Technological Development, Autonomous Province of Vojvodina, Republic of Serbia.

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farming was based on domestic indigenous races with the dominant one, Shumadinka. This type of pigs was crossbred on the farm Kis Jeno with races such as Bakonyi and Szalantor, which led to the establishment of a special breed of pigs called Mangalitsa. Due to the extreme moderation and resistance it was widespread in Vojvodina (especially Srem) and Hungary to the fifties. Today, in Serbia there are three indigenous breeds of domestic pigs Mangalica, Moravka and Resavka while Shumadinka and Shishka were lost in its original form. There are three strains of Mangalitsa in Serbia: lasa (Srem black lasa or Budanovacka pig), white and Subotica strain (Gajic et al. 1997). In Hungary and Romania the so-called ginger strain also appears. Recently, there has been a growing interest in indigenous race, not only to preserve the gene, but also for the production of meat products in the traditional way. Mangalitsa is typical greasy pig breed whose hemispheres consist of 65 - 70% fat and 30 - 35% meat (Egerszegi et al., 2003), which is sufficient for the production of high-quality hams and other products. The results of other studies (Szabo, 2001, 2002 -. Egerszegi Cit et al., 2003) show that less than 40% of lean meat in the carcass, which is sufficient for the production of high-quality hams and other products.

Breeding indigenous race is condition for the creation of raw material for the production of the special characteristics of food products, or products with geographical indications. Development and production of traditional products with protected geographical origin enables better visibility and positioning in the market and higher profits. The value of geographical indications is based on the belief that consumer products are marked with the mark of origin and quality of special properties. In this way, the competitiveness of these products increases significantly, achieving a market advantage compared to the same type of products that do not have such a label. Regardless of the long-term survival in the presence of specific market conditions and permanent characteristics of certain products which can be achieved only by creating a stable source of raw materials. This method allows the conditions for organic livestock production and potency open for utilization of its potential (Katic et al, 2010).

Intensive farming and one-sided selection resulted in, among other things, the big difference between Mangalitsa and noble race. Mangalitsa is mostly the result of natural selection and the conditions of rural households that were not adhered to conventional veterinary preventive and curative since the species itself is extremely easy to hold. In extensive breeding have needs for simple shelter from the rain and snow, which is especially true for pregnant animals. It needs to take care of the basic conditions to hold, otherwise it could get to cannibalism or inphantophagy by other animals. Their requests for food are humble, but they are looking for diversity, what in free grazing is not a limiting factor. They exploit good what they find in nature, and with the addition of concentrated food and space limitation are subject to extremely fattening and accumulation of body fat, where older animals reach a weight of 200 kg or more.

Materials and methods

The study of economic parameters of fattening pigs, pigs Mangalitsa and Yorkshire breeds as a raw material for the manufacture of products with protected origin is based

on the determination of the total production cost. Costing calculation is performed for fattening up weight of 132 kilograms. Determination of the cost or certain categories of expenses is based on natural indicators examined farms. Research production traits were studied on farms where Mangalitsa (M) and Yorkshire (Y) are produced in the period between 2009 and 2012. The presented data refers to 432 litters of Mangalitsa and 675 litters of Yorkshire breed.

In addition, taking into account the fact that individual farmers do not have adequate documentation of investments in fixed assets, access to their assessment, in order, based on the estimated value, to calculate amortization and maintenance costs (Marko, et al., 1998). In this way, it allows the results to be of a general and not only local significance.

Results and Discussion

When examining the observed farm-based research sample and in line with established product data sufficiently describe the production of both races. In the first phase was analysed reproduction of the both races and the determined values arerelated to litter size and give in Table 1. Presented data clearly show significantly better reproductive traits of Yorkshire breed compared to Mangalitsa.

Table 1. Phenotypic differences for litter size

No	Traits	Yorkshire		Mangalitsa	
			δ		δ
1	Alive born	12,1	2,8	7,2	2,6
2	Weaned	10,6	2,7	6,8	2,7
3	Alive born/sow/year	24,2	2,6	12,96	2,9
4	Weaned/sow/year	23,4	2,6	12,18	2,8
5	Finishers/sow/year	22,6	2,8	12,12	2,9

Source: own research

Second phase of the study has determined the size of the related production traits, that weight gain and feed conversion for each of the race. In this case, obviously is much better productivity Yorkshire breed which is consistent with previous studies (Zekic et al, 2009). Comparative overview is given in Table 2.

Table 2. Phenotypic differences for growth and feed conversion

No	Traits	Yorkshire		Mangalitsa		Differences
			δ		δ	
1	Life gain to 100 kg (g)	579	154	203	160	376**
2	Life gain up to 132 kg (g)	584	160	242	160	341**
3	Age at 132 kg (days)	227	12	540	24	- 313**
4	Feed conversion (kg)	3,1	0,9	5,2	1,3	- 2,1**

Source: own research

Most of the material costs are the costs of food. Costing provides for the use of three types of concentrates with production carried out on the same farm. Fattening of weaned piglets begin with concentrate with 20% protein. During fattening the protein in food is gradually reduced so that the fattening ends with concentrate containing 14% protein. For feeding breeding stock animals is provided a special mixture of nutrients. Review of types of concentrate used during the fattening period and cost of materials consumed for their production is given in Table 3.

Table 3. Production price of the used concentrate

No	Feeding period	Price (RSD/kg)
1	To 25 kg	50,84
2	From 25 to 132 kg	36,00
3	Basic bevy feeding	44,11

Source: authors' calculations

Calculation of costs of fattening pigs to the weight of 132 kilograms is divided into two phases and corresponding stages of the technological process of production of fattening pigs. The first stage involves the calculation of the production costs of pigs, while the second phase is related to the fattening costs. Calculation of costs in piglet production takes into account the costs of food for pigs, veterinary services, heating costs and losses of piglets. The calculation of production costs of Yorkshire piglets' race is shown in Table 4.

Table 4. Calculation of piglet price Yorkshire race

No	Cost type	Quantity	Price (RSD/m.u.)	Total (RSD)
1	Piglet food	47,60	50,84	2.419,98
2	Food for sows and boars per piglet	47,01	44,11	2.073,42
3	Veterinary services			224,67
4	Loss of piglets			155,70
5	Total			4.873,77

Source: authors' calculations

The same methodology was performed for the calculation of production costs of Mangalitsa piglets' race and it is shown in Table 5.

Table 4. Calculation of piglet price Mangalitsa race

No	Cost type	Quantity	Price (RSD/m.u.)	Total (RSD)
1	Piglet food	85,00	50,84	4.321,40
2	Food for sows and boars per piglet	90,29	44,11	3.982,88
3	Veterinary services			415,21
4	Loss of piglets			523,17
5	Total			9.242,66

Source: authors' calculations

The calculation of the total costs of fattening pigs, as a second stage in the calculation, is based on the production prices of piglets and continues to all other costs incurred in the process of fattening pigs' average weight of 132 kg. Fattening pigs and the calculation are performed up to a weight that is greater than the standard since the production of traditional fermented dry sausage and dry meat products demands meat whose properties differ from properties that come on the fattening weight of 105 kg.

The calculation of the total costs was based on previously collected data, which are common on the farms. In addition, the corrections of costs are derived and their compliance with the standards for the appropriate category.

The calculation of the costs of production of fatteners is derived by different races. Overview of the total costs of Yorkshire porkers is shown in Table 5. The first category of costs makes the production price of fattening pigs. The size of the calculation assumes the production of piglets for fattening and the first item is the input cost in the production of fattening pigs.

Table 5. Calculation of total cost per fettling Yorkshire race

No	Expenses	UM	Price (RSD/UM)	Quantity (kg)	Value (RSD)
1	Piglets for fattening	kg	194,95	25	4.873,77
2	Food for fattening	kg	36,00	238	8.568,00
3	Veterinary services				67,21
4	Water				70,00
5	Electricity				120,00
6	Amortisation of the equipment and basic bevy				1.313,85
7	Salaries				874,53
8	Fattening losses				68,49
9	Total expenses				15.955,85

Source: authors' calculations

The second category is the cost of feed. The quantities expressed in the calculation were determined on the basis of norms of consumption of these nutrients for the reference category of the manufacturing sector. The total amount of food to feed fattening pigs from 25 to 132 pounds of body weight is 238 kg. The third category consists of calculation of costs of veterinary services. This category was calculated based on estimates of the costs to 0.5% of total actual cost of growing and eating of piglets in the fattening stage. The fourth category consists of the costs of supplying water to farms in the calculated amount of 70 dinars per head, while the estimated costs of electricity amounted to 120 dinars per head. Costs of amortization and facility in farrowing pens were determined with estimated useful life (25 years) and the projected number of porkers. Costs of amortization of basic bevy of pigs were calculated as the difference between the purchase and slaughter value assigned to the predicted number of porkers. Calculation of costs of salaries of workers implies

the use of two people without qualifications. Averaged losses of fattened pigs on individual sector amounted to 0.5%. The given data are in agreement with previous studies (Zekić et al., 2008, 2010).

Calculation of production costs fattened pigs' race Mangulitsa is shown in Table 6. As in the previous case the first category of costs makes the production price of pigs for fattening.

Table 6. Calculation of total cost per fattening Yorkshire race

No	Expenses	UM	Price (RSD/UM)	Quantity (kg)	Value (RSD)
1	Piglets for fattening	kg	369,71	25	9.242,66
2	Food for fattening	kg	36,00	577,8	20.800,80
3	Veterinary services				60,09
4	Water				70,00
5	Electricity				50,00
6	Amortisation of the equipment and basic bevy				1.264,97
7	Salaries				816,73
8	Fattening losses				60,45
9	Total expenses				32.365,70

Source: authors' calculations

Reported amounts of feed in the calculation were determined on the basis of norms nutrient consumption of these categories for a given race. The total amount of food to feed fattening pigs from 25 to 132 pounds of body weight was 577.8 kg. The next category of costs makes the calculation of costs of veterinary services. This category was calculated based on estimates of the costs to 0.2% of total actual cost of growing and eating of piglets in the fattening stage. This value is lower than the Yorkshire breed because it is a native species and it has a much higher resistance to adverse conditions and submit posture. The fourth category consists of the costs of supplying water to farms in the calculated amount of 70 dinars per head, while the estimated costs of electricity amounted to 50 dinars per head. Costs of amortization and facility in farrowing pens were determined with estimated useful life (25 years) and the projected number of porkers. Costs of amortization of basic bevy of pigs were calculated as the difference between the purchase and slaughter value assigned to the predicted number of porkers. Calculation of costs of salaries of workers implies the use of two people without qualifications. Averaged losses of fattened pigs on individual sector amounted to 0.2%.

Conclusion

The calculation of the production costs of the both races of fattening pigs was performed under conditions of intensive breeding farm system. In this way, the established cost of production is without the overhead costs per pound of live weight. In accordance with that cost of production for Yorkshire race is 120.88 d/kg or 1.26 €/kg and it is lower than the current purchase price in the market. On the other hand cost of production for Mangalitsa race

is significantly higher than the purchase price of pigs bred races and it is 245.19 d/kg or 2.13 €/kg. These results are in case of fattening pigs race Mangalitsa less favourable compared to the previously established cost of production of fattening pigs race Mangalitsa in extensive breeding conditions where costs were about 1.71 €/kg live weight. The race Mangalitsa has very low productivity, and consequently achieves higher per-unit cost. Due to the extremely slow growth and high feed conversion, breeding of Mangalitsa can be economical only in the extremely extensive housing conditions and free grazing. Without additional feeding they can reach about 80 kg per year, which may be increase with adequate additional feeding. In addition, these breed fatteners have a lower percentage of lean meat and less favourable yield.

On the other hand, given the quality of the meat obtained in this way it is suitable as a raw material for the manufacture of products that can be labelled a protected geographical indication. Accordingly, this kind of production is necessary to implement trough the higher level of finalization and thus it is possible to achieve a positive economic effects. In addition, the advantages over conventional production of fattened pigs concerning the circumstances that during the year supply and demand of fattened pigs bred races subject to significant cyclical fluctuations. This results in a significant change in the price of fattened pig and makes this production very risky. Accordingly own production of a specific product is the rational solution through which avoids negative impacts of price fluctuations and creates continuity in the supply of raw materials with uniform and satisfactory quality.

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POREĐENJE EKONOMSKIH OBELEŽJA TOVA SVINJA MANGULICA I SVINJA RASE JORKŠIR

Vladislav Zekić, Vladimir Tomović, Dragan Milić, Dragomir Lukač [3]

Sažetak

Cilj rada je poređenje ekonomskih obeležja proizvodnje tovljenika rase mangulica i rase jorkšir. Posmatrane proizvodnje trebaju da pruže sirovinsku osnovu za izradu tradicionalnih fermentisanih kobasica, odnosno specifičnih proizvoda sa zaštićenim poreklom. U skladu sa tim izveden je obračun ukupnih troškova tova svinja rase mangulica i jorkšir do klanične mase od 132 kilograma u uslovima savremenog farmskog sistema držanja. Navedeni obračun uključuje troškove osnovnog i pomoćnog materijala, troškove energije i troškove eksternih usluga, troškove zarada i amortizacije korišćenih objekata i opreme. Na ovaj način moguće je doći do ukupne cene koštanja proizvedenih tovljenika po kilogramu žive mase bez opštih troškova. Cena koštanja obračunata na navedeni način za tovljenike rase jorkšir iznosi 120,88 d/kg odnosno 1,26 €/kg i niža je od trenutne otkupne cene na tržištu. Sa druge strane, cena koštanja za tovljenike rase mangulica znatno je viša od otkupne cene za tovljenike oplemenjenih rasa i iznosi 245,19 d/kg odnosno 2,13 €/kg što je uslovljeno sporim prirastom i neefikasnom konverzijom hrane u odnosu na oplemenjene rase.

Ključne reči: *tov svinja, jorkšir, mangulica, troškovi*

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Review Article

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MONTENEGRIN AGRICULTURE: DIAGNOSIS AND POLICY RECOMMENDATIONS

Nikola Fabris[1], Igor Pejović[2]

"The world has more than enough food to feed everyone, yet 850 million are food insecure"[3]

Summary

Montenegro has turned to the service sector in the last two decades and agriculture is largely neglected. The neglect of agriculture has a negative effect on the creation of GDP, employment, current account deficit (of balance of payment) and starting of migrations from rural to urban areas of the country. The authors of this paper set up two goals. First to do an analysis of the situation in agriculture from macroeconomic and accounting aspect. Second goal is to provide policy recommendations for improving situation in agriculture of Montenegro on the bases of the obtained results. The authors used the base of the final accounts of Central Bank of Montenegro for the calculation of the most important ratio indicators. Key recommendations relate to the credit support to agricultural sector, increasing amount of subventions, granting of tax benefits, raising the degree of technical equipment and application of agro-technical measures, as well as the improvement of general living conditions in rural areas.

Key words: *Montenegro, agriculture, ratio numbers, recommendations*.

JEL: *O13, Q10, E60*

Introductory remarks

Montenegro is a small, highly open economy, which is dominantly service-oriented. Since the end of World War II, Montenegro has undergone through several major structural changes. At the end of the Second World War, it was backward, underdeveloped country dominated by agriculture. Then in accordance with a socialist concept of accelerated development the industrialization was forced, so at the beginning of the transition process

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3 World Bank 2007, p. 94.

the industry has created nearly half of GDP. However, with the transition process, the emphasis shifted toward the service sector, so at the end of the year 2010, the service sector created almost two-thirds of GDP. In the whole observed period agriculture was unjustifiably neglected and there was the tendency of agriculture share decreasing in the creation of GDP. So after the Second World War, the agriculture created 40% of Montenegro's GDP, but in 2010 it was reduced to only 7.7%. Even larger changes were present in change of population structure, because for instance in year 1948 agricultural population represented 71.6% of total population, and according to results from population census in year 2003, the agricultural population represented only 5.3% of total population (Žugić, 2012: 46).

The authors believe that it is about time to stop this trend of Montenegrin agriculture neglect and that economic policy should support more agriculture. In the next period, on the global scales, agriculture will face more favourable conditions. As Detthier and Effenberger (2011: 2) point out that after two decades of neglect of agriculture (on global level - remark by authors) high rise of food prices and food shortages put agriculture back in the centre of interest. Also, McNeely and Scherr (2002: 4) estimate that over the next two to three decades, the demand for food will be higher by 40% to 60% from current production.

One of the main causes of lack of competitiveness in the Montenegrin agriculture is low productivity, as a result of lack of equipment, diminished properties, and a large part of soil with poor fertility (Ministry of Agriculture, 2008: 43). Agricultural farms due to unfavourable economic and social situation are not in position to provide sufficient funds for the modernization of production. Production is very diverse and the degree of utilization of agricultural area is very low (Jovanovic, Despotovic, 2012: 207).

The neglect of agriculture had a large number of other associated negative consequences. First obvious result was the growth of food import, which contributed to a significant deterioration of already high current account deficit. Another direct consequence was a considerable emigration from rural areas to Podgorica and the coastal region. With this also came to too much pressure on the infrastructure of these cities and the incensement of social problems, because a large number of newcomers did not find employment. The third result was that the decline in GDP during the Global financial crisis was extremely high. Specifically, it appeared that in the crisis service sector had a rapid decline, while agriculture on the other hand achieved positive high rates of GDP.

Agriculture and forestry are the fields that should not be viewed solely from aspect of creating of GDP, but also from aspect of initiating rural development, development of processing industries, particularly food and wood processing, reduction of regional disparities, and also as support to the development of tourism. As outlined in the *Regional Development Strategy of Montenegro* (2010: 14), most of the development potential is located in areas that are least developed, and therefore agriculture, especially production of healthy food and available forest potential should be adequately valorised in the future period.

In this paper authors have set two main goals. The first goal relates to the analysis of the financial position of agriculture (ratio numbers), as well as other indicators of agricultural

business. The second goal of work relates to the creation of policy recommendations for improvement of situation in the Montenegrin agriculture.

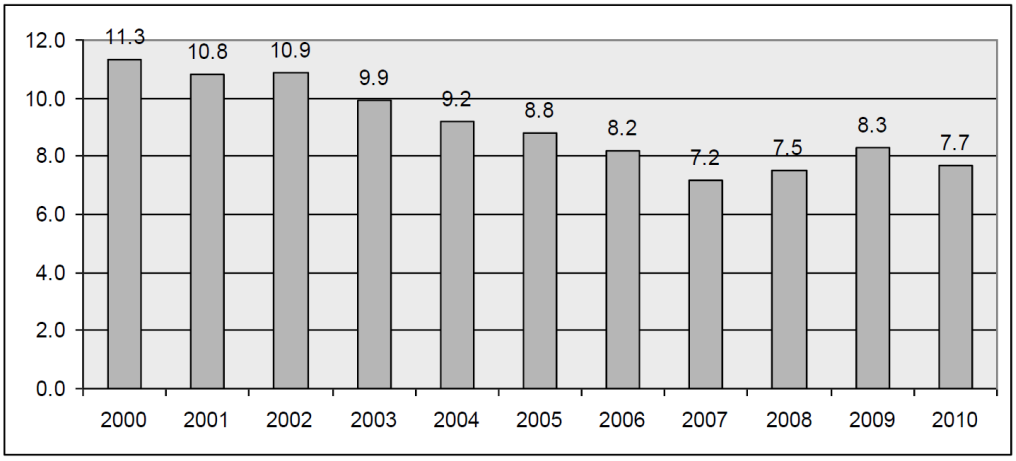
Analysis of financial and other business indicators of agriculture is based on the final accounts. The authors have used as a source base of the final accounts of the Central Bank of Montenegro (CBM). To provide comparative conclusions same indicators are used for the entire Montenegrin economy that were taken from a study of the CBM "Information on the business of the Montenegrin economy" (2011). Observation subject in this paper is time period between years 2005 and 2010, for which the financial accounts were available.

The paper consists of three parts. The first part analyses the macroeconomic aspects of agriculture that is the share in Montenegrin GDP, importance for Montenegrin economy, as well as tendencies. In the second part of the paper empirical analysis of agricultural business indicators in the period between year 2005 and 2010 is given. The third part of the paper concerns the policy recommendations on what should be done in following period to improve the agriculture position in Montenegro.

The Change of position of agriculture in the Montenegrin economy

After World War II Montenegro was a backward agrarian area, with traditional organisation of economic life, 85% of the population lived from agriculture, and yet, fifteen percent of the population was engaged in handicrafts, trading and other activities. However, following the socialistic concept of industrialization, there are major structural changes in the creation of GDP. During this period the emphasis was on encouraging the development of 'heavy industry" (energetic, mining, metal industry) and the rapid development of traffic. With this comes to rapid growth of industry share in the creation of Montenegrin GDP.

Graph 1. Share of agriculture in Montenegrin GDP (period 2000-2010)

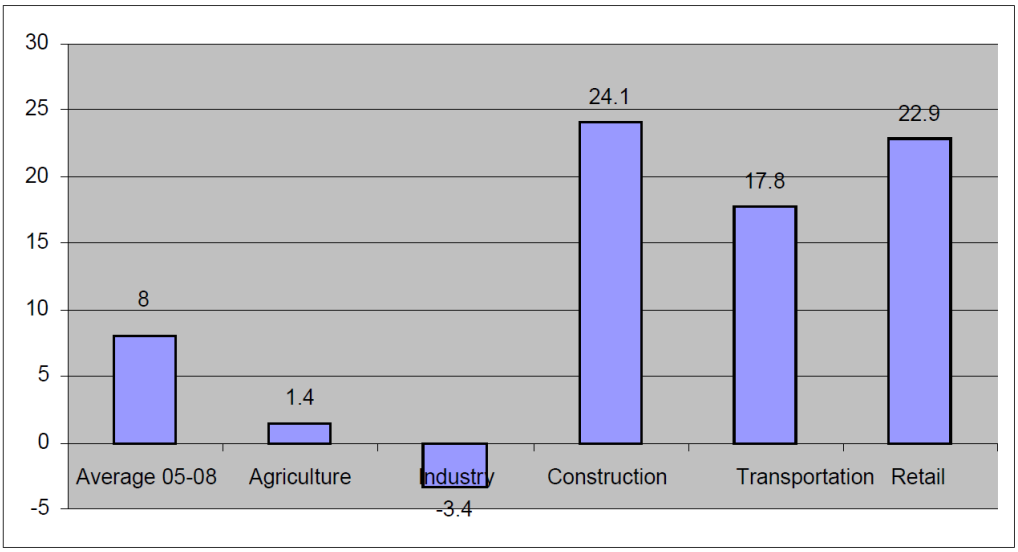


Source of data: Author's calculations based on data of the Statistical Yearbook for year 2011.

From the graphics it can clearly be seen that in the observed period there is a tendency of further decreasing in the share of agriculture in GDP that in year 2010 was almost 50% lower than in year 2000.

In the period of transition there was a major structural change in the creation of Montenegrin GDP, when the economy shifted toward service sector. There is the impression that the most significant structural changes occurred in the three years period of economic boom, when the average high rate of Montenegrin GDP was 8% (Fabris, Jandrić, 2011: 120). During this period a rapid growth of service sector was achieved, and industry and agriculture were completely neglected. Industry achieved negative growth, and agriculture a modest growth that was significantly behind the average high rate of economy growth. It is obvious that the three observed service sectors - construction, transportation and retail (Graph 2) grew at a more rapid pace than their potential, experiencing a plunge in the post-crisis years and thus contributing to a sharp decline (2009) and/or slow recovery of GDP (2010 and 2011).

Graph 2. High rates of selected sectors of the Montenegrin economy (period 2005- 2008)



Source: Fabris, N., Mijatović, M. (2011): *Critical Overview of Montenegro's Growth Model*, Europe and the Balkans: Economic Integrations, Challenges and Solutions, University of Orleans.

At the same time as a result of neglect of agricultural production (impoverishment of the agricultural population), which was for decades a traditional activity in the north of Montenegro, it had come to the significant population migrations to Podgorica and coastal towns. Although between the two population censuses in Montenegro the number of inhabitant increased by 0.8% (Monstat, 2011a), the table clearly shows that the number of population in the northern region decreased drastically, while in the other two regions it increased.

Table 1. Migration of the Montenegrin population between two censuses

Territory	North Region	Central Region	Coastal Region
Change in number of population (between the two census)	- 7.4%	8.3%	1.9%

Source: Author's calculations based on data Bases of the final accounts of the Central Bank of Montenegro and MONSTAT (2011a). Prvi rezultati popisa stanovništva, domaćinstava i stanova u Crnoj Gori, Podgorica.

World Bank study (2007: 2) showed that agricultural development can be an effective instrument that would reduce poverty and with that migrations. Also, Loayza and Raddatz (2010) show for a cross-section of developing countries that growth in more labour-intensive sectors such as agriculture has a larger impact on poverty reduction than less labour-intensive activities. The logical consequence of migration of population from rural areas was a reduction in the number of employees in agriculture and reduction of their share in total employment.

Table 2. Share of employees in agriculture and forestry in total number of employees

Indicator	2003	2011
Total employees	142,679	161,742
Agriculture and forestry	3,926	2,347
% share of agriculture in total no. of employees	2.8	1.5

Source: Author's calculations based on a database of the Employment agency and census results from 2003 and 2011.

The table shows that since the census in year 2003 share of employees in agriculture, forestry and water management in total is decreasing, which represent a confirmation that the part of agricultural population sought employment in other industries that have developed quickly in the observed period. Data on the number of agricultural population according to census from year 2011, are not yet available, but comparing the data of the number of agricultural households (Monstat, 2010) we can notice that in the period between years 2003 and 2010 the number of agricultural households has increased by 5,631 (from 43,216 to 48,847). At first glance these results seem contradictory, but given the motion of the average wage of 484 Euros (Monstat, 2012a) and the minimum consumer basket of 770 Euros (Monstat, 2012) at the end of year 2011, one number of population was forced to seek additional sources of income, which they found in carrying out the agricultural activity. These data suggest that agriculture in Montenegro has a perspective and that a part of the population is once again turning towards agriculture. How big the potential of agriculture for employment is can best be seen from the FAO study (2006), which has estimated that agriculture provides employment for 1.3 billion workers. This data has clearly showed that Montenegro has share of employments in agriculture significantly below world average.

The analysis of accounting indicators

Analysis subject will be motion of chosen accounting ratio. The aim of this analysis is to determine the profitability, liquidity, indebtedness and solvency of agriculture and on the basis of these indicators to formulate policy recommendations for agriculture.

Agriculture in the entire observed period operated with profit, even in year 2009 when the Montenegrin economy was severely hit by the global financial crisis, which confirms the previously outlined hypothesis that the Montenegrin economy would felt the crisis less if it had a greater support in the agriculture.

Table 3. Profitability in Montenegrin agriculture and economy (in EUR)

Indicator	2005	2006	2007	2008	2009	2010
1. Net profit / loss	758,689	2,733,959	2,082,051	3,087,386	2,269,396	2,706,866
2. Total income	30,423,748	57,865,079	51,912,882	54,435,379	48,360,992	85,463,951
3. Net profit rate of agriculture (1:2) x100	2.50	4.73	4.01	5.68	4.70	3.17
Net profit rate of the Montenegrin economy	-3.2	2.0	2.47	0.15	-1.79	0.48

Source: Author's calculations based on final accounts

Comparing to the rate of net profits of Montenegrin agriculture, it can be seen that profit rate in the entire observed period was higher than for the Montenegrin economy. Such findings suggest that agriculture has significant perspective in Montenegrin economy. Similar conclusion can be made if rate of capital income and total reserves are observed (Table 4).

Table 4. Return on capital and total reserves in Montenegrin agriculture and economy (in 000 EUR)

Indicator	2005	2006	2007	2008	2009	2010
1. Net profit / loss	759	2,734	2,082	3,087	2,269	2,707
2. Capital and reserves	29,786	105,588	119,662	118,471	112,049	140,553
3. Return on capital and total reserves in agriculture (1:2)x100	2.55	2.59	1.74	2.61	2.03	1.93
4. Return on capital and total reserves of MN economy	-6.20	1.55	3.88	0.12	-1.56	0.41

Source: Author's calculations based on final accounts

The assets of Montenegrin agriculture in the observed period rose steadily.[4] However, at the end of 2010 the asset share of agriculture in total assets of the Montenegrin economy is lower than it was year 2006. This clearly indicates that the increase in total agriculture assets (of 45.7%) over the period 2006 – 2010 was lower than the average for the entire country (103%).

Table 5. Motion of agriculture assets and Montenegrin economy (in 000 EUR)

Indicator	2005	2006	2007	2008	2009	2010
Total assets agriculture	45,838	137,782	142,419	147,955	149,140	200,870
Total assets MN	5,579,300	7,267,059	10,928,566	13,548,695	13,671,041	14,795,214
Share of assets of agriculture in total assets	0.82	1.90	1.30	1.09	1.09	1.36

Source: Author's calculations based on final accounts

The question how in the observed period the liquidity of agriculture moved is of great importance. The liquidity coefficient of first degree (liquidity ratio or rigorous liquidity ratio) is obtained by putting into relation cash and cash equivalents with short-term liabilities. This indicator of current liquidity shows the ability (degree) of settling short-term liabilities (Table 6).

Table 6. Motion of liquidity ratio first degree in the Montenegrin agriculture and economy (in 000 EUR)

Indicator	2005	2006	2007	2008	2009	2010
1. Cash and cash equivalents	908	2,703	5,216	2,990	822	1,176
2. Short-term liabilities	13,645	27,050	15,688	20,974	23,840	39,515
3. Liquidity ratio I degree of agriculture (1:2)	0.07	0.10	0.34	0.15	0.04	0.03
Liquidity ratio of Montenegrin economy	0.09	0.14	0.17	0.13	0.09	0.10

Source: Author's calculations based on final accounts

The observed table shows that the liquidity of agriculture is unsatisfactory and that in the last four years the tendency of its continuing deterioration is present. Also, except in the period 2007-2008 the liquidity of agriculture was worse than the average for the Montenegrin economy.

To get a complete picture of the liquidity of agriculture we will calculate indicators of liquidity of II and III degree. Liquidity indicator of the second degree ((working capital - supplies)/ short-term liabilities) indicates whether or not company covers or do not cover its short-term liabilities by liquid funds and collectible receivables. As Matz (2005: 53) emphasizes preferred value of this ratio is between 1 and 1.2.

4 The value of agriculture assets was not largely affected by the growing real estate prices in Montenegro during the observed period. The highest real estate price increase was in coastal municipalities and Podgorica.

Table 7. Motion of the liquidity coefficient of the second degree in the Montenegrin agriculture and economy (in 000 EUR)

Indicator	2005	2006	2007	2008	2009	2010
1. Working capital	17,703	36,215	31,868	37,430	42,396	68,411
2. Supplies	3,141	14,766	12,686	17,777	21,499	33,097
3. Short-term liabilities	13,645	27,050	15,688	20,974	23,840	39,514
Liquidity indicator of the second degree of agriculture [(1-2) : 3]	1.07	0.79	1.22	0.93	0.87	0.89
Liquidity indicators of the II degree of Montenegrin economy	1.31	1.24	1.35	0.72	0.72	0.74

Source: Author's calculations based on final accounts

As seen from the table neither the Montenegrin economy nor agriculture are capable that from the liquidity funds, as well from short-term claims settle short-term liabilities. Until the appearance of the global financial crisis the liquidity of the Montenegrin agriculture was worse than the average economy liquidity, and after the crisis the situation has changed, which once again confirms the hypothesis that agriculture is more resistant to shocks.

Liquidity coefficient of the third degree, or better known as general liquidity coefficient, is obtained by putting in relation the working capital and short term liabilities. The critical value of this indicator is 1 and if this indicator is higher than 1 it indicates that current assets can cover the short-term liabilities. The value of the indicator below 1 indicates that fixed assets cover part of the short-term liabilities, which is considered as an unfavorable indicator. However, it is recommended that this ratio should be at least 1.2, and preferably even to be over 2 (Matz, 2005:54).

Table 8. Liquidity Coefficient of the third degree for the Montenegrin agriculture and economy (in 000 EUR)

Indicator	2005	2006	2007	2008	2009	2010
1. Working capital	17,703	36,215	31,868	37,430	42,396	68,411
2. Short-term liabilities	13,645	27,049	15,688	20,974	23,840	39,515
3. Liquidity Coefficient of the third degree in agriculture (1:2)	1.30	1.39	2.04	1.78	1.77	1.73
Coefficient liquidity III degree of MN economy	1.03	1.06	1.09	1.05	1.04	1.07

Source: Author's calculations based on final accounts

As we can see from the table Montenegrin agriculture in the observed period had a higher value than 1, indicating that the working capital covered short-term liabilities. Also, during the whole observed period this indicator is favorable than in the overall economy.

Asset turnover ratio shows the relation between income and asset, that is the amount of income per euro of engaged assets. In the literature there is no general recommendation on how much should be a desirable value of this coefficient, so that the desired value should be found in comparison with the branch value and the nearest competitor (Spasić, 2012: 21). Theoretically, higher value of this indicator shows better performance.

Table 9. Asset turnover ratio for Montenegrin economy and agriculture (in 000 EUR)

Indicator	2005	2006	2007	2008	2009	2010
1. Total income	30,424	57,865	51,913	54,435	48,361	85,464
2. Total assets	45,838	137,782	142,419	147,955	149,134	200,870
3. Asset turnover ratio of agriculture (1:2)	0.67	0.42	0.37	0.37	0.33	0.43
Asset turnover ratio of MN economy	0.59	0.63	0.57	0.56	0.44	0.44

Source: Author's calculations based on final accounts

The value of the observed coefficient and for the whole economy and for agriculture cannot be rated as satisfactory, because they indicate small investment ability comparing to total appropriation. Situation in agriculture can be estimated quite unsatisfactory considering that the value of this indicator in the whole observed period was lower than the average for the Montenegrin economy with exception in year 2005.

As the liquidity of agriculture proved to be inadequate and considering the low profitability, there is the question of degree of indebtedness of agriculture. As an indicator of indebtedness of agriculture we may use debt ratio, that is ratio of capital to total liabilities (capital and reserves / (short + long-term liabilities)). As emphasized by Investopedia encyclopedia, this ratio is used for assessing the risk profile of the company (Investopedia, 2012). Value less than 1 suggests that the company has more liabilities than the amount of its capital.

Table 10. Motion of indicator of indebtnes of Montenegrin agriculture and economy (in 000 EUR)

Indicator	2005	2006	2007	2008	2009	2010
1.Capital and reserves	29,786	105,588	119,662	118,471	112,049	140,553
2.Long-term liabilities	2,407	5,145	7,069	8,509	13,251	20,802
3. Short-term liabilities	13,645	27,050	15,688	20,974	23,840	39,515
4. Indebtedness ratio of agriculture [1:(2 +3)]	1.86	3.28	5.26	4.02	3.02	2.33
Indebtedness ratio of Montenegrin economy	1.38	1.13	0.96	0.79	0.90	0.92

Source: Author's calculations based on final accounts

The table shows that Montenegrin agriculture is not high indebted unlike the Montenegrin economy (which has a level of debt higher than capital and reserves in observed period with the exception of 2006). The reasons for lower indebtedness of agriculture should also be sought in the banks reluctance to grant loans to agricultural producers due to a lower quality of collateral, the inability to put administrative ban on salary (agricultural producers are treated as self-employed), high fluctuations in production due to weather conditions, the lack of income statements and balance sheets, and so on.However, a certain level of concern creates the fact that in the last four years value of this indicator deteriorates.

As an approximation of solvency indicator that represents the relation of capital can be used (with included reserves) and fixed assets. Solvency indicators are important, because they show financial security of company, that is reflect the long-term risks of investments in the

company (Jakšić, 2006:725). However, unlike banking, where the value of the solvency ratio (coefficient of capital adequacy) is strictly regulated and is subject to the strictest controls (Kozarić, Fabris, 2012:47) for non-financial sectors there is no strict control and solvency management is left to the companies. The value of this indicator of 1 suggests that fixed assets are fully covered with capital and this is usually considered as the minimum of desirable value. Otherwise part of fixed assets is covered from funds of lower quality and shorter maturity. The following table shows the motion of solvency coefficient for the Montenegrin economy and agriculture.

Table 11. Motion of relation of capital and fixed assets in Montenegrin economy and agriculture (in 000 EUR)

Indicator	2005	2006	2007	2008	2009	2010
1. Capital and reserves	29.785	105.588	119.661	118.471	112.048	140.553
2. Fixed assets	28.134	101.567	110.551	110.524	106.743	132.459
3. Capital in relation to fixed assets in agriculture (1:2)	1,06	1,04	1,09	1,08	1,05	1,07
Capital in relation to fixed assets MN economy	0,80	0,76	0,70	0,63	0,68	0,69

Source: Author's calculations based on final accounts

In the case of agriculture we can see that in all observed years solvency ratio was greater than 1 and that fixed assets was covered by capital increased by the reserves. On the other hand the economy of Montenegro had the value of this coefficient below 1 in the entire observed period.[5]

Compared to Montenegro's economy, most of agriculture ratios are more favourable. Nevertheless, labour force outflow remained, as well as a declining share of agriculture in GDP of Montenegro. The reasons for such a trend are to be found, inter alia, in less favourable living conditions in rural areas with prevailing agricultural activity, a more difficult nature of labour in agriculture, the aspiration of younger generations to better education (faculties are primarily concentrated in urban areas) and living in cities, the belief that best opportunities for personal progress can be achieved in major cities and coastal towns, better wage opportunities in urban areas, and the like.

Policy recommendations for improvement in the Montenegrin agriculture

Previous analysis showed that agriculture has a low degree of profitability, but higher than average for Montenegrin economy. Ratio analysis showed that the key problem of Montenegrin agriculture is liquidity, while agriculture is not highly indebted and has no problem with solvency. Therefore, the priority for improvement of condition in the field

5 The reasons for a more favourable solvency ratio in agriculture than the average in the Montenegrin economy should also be sought in the fact that a great number of companies with the initial capital of 1 EUR have been established in recent years, operating in rented premises and without any significant available capital.

of agricultural production should be the providing the credit for liquidity. In a situation of insufficient interest of the banking sector for support of agriculture, the alternative is that state through the Development-Investment fund encourages agriculture to a greater extent or to directly subsidize bank loans for agriculture. This recommendation is in accordance with the findings of Croppenstedt et al. (2003) that credit constraints severely restrict fertilizer adoption by farmers. Increased use of fertilizer is one of the important conditions of increasing yields in Montenegrin agriculture.

Montenegro's agriculture should be intensified and land should be agglomerated. However, it should be taken into account that there are significant areas where agglomeration will not be possible due to geographical and socioeconomic reasons and these areas will remain with prevailing extensive production. On the other hand, a significant room for growth both in agricultural production and employment lies in the exploitation of vast uncultivated land.

Montenegro has no potential for becoming a significant agricultural exporter, but surely there is room for reducing agricultural imports. Subsidies to agricultural producers are given worldwide.[6] Therefore, the state must continue to support agricultural production in the future period, as it done in the developed countries. Otherwise, if a smaller amount of subventions is approved than to foreign competitors, that selling their product on Montenegrin market, agricultural producers will be in disadvantaged position in comparison with its main competitors on domestic market (CBM, 2011a: 15). In year 2011, 14 million was approved on behalf of the agrarian budget, which is a decrease comparing to year 2008 when the agrarian budget was 16.5 million Euros (Agricultural Budget, 2011). Also, it is almost twice lower amount than what it was projected by National program of food production and rural area development (2008: 93). In addition, it should be noted that a mere allocation of subsidies without structural changes will not significantly improve Montenegro's agriculture.

Incentives for development of agriculture are important for reducing poverty and stopping the migrations. A large number of empirical studies confirmed the link between agricultural development and poverty reduction (Dethier, Effenberger 2011, Loayza et. al. 2010, Datt, Ravallion 2008, Mellor 2001 and others). Christiansen and Demery (2007) estimate that 1 % per capita agricultural growth reduces poverty more than 1.6 times the growth in the industry and three times more than growth in the service sector.

It is obvious that Montenegro should not just leave agriculture to the market, but that an entire program of support is needed that would be based on three pillars:

- Improving the competitiveness of producers,
- Sustainable resource management and
- Improving the quality of life in the countryside.

A special issue of Montenegrin agriculture is extremely low incomes as a result of inadequate mechanization application and agro-technical measures. As emphasized by

6 One should bear in mind that agriculture is one of the few activities in which the WTO allowed the subvention of export production (Trajčevska, et al, 1999).

Pretty (1995: 3), as high as 70% to 90% increase in agricultural production in the early nineties was due to increasing incomes, rather than increasing agricultural land. This is a clear guideline to Montenegrin economic policy makers, that credit and technical assistance for this purpose is needed. Also, the World Bank (2009: 21) points out that a key direction of increasing incomes in developing countries should rely on an increased level of mechanization. World Bank suggests the purchase of equipment on lease to minimize risks, and it for the period 2010 - 2012 significantly increased funding for the credit support to countries in development for this purpose. Montenegro needs to consider the possibility of use of these funds. Grabowksi and Self (2007) came to similar conclusion and they have established a positive relation between different measures of agricultural productivity and average growth of real GDP per capita over 1960 - 1995 for a cross-section of countries.

In the future period it is necessary to change the structure of production and redirect it toward cultures that carry higher profit potential, like growing early fruits and vegetables and increase the production in greenhouses (CBMN, 2011: 15). It should go to the option of forming clusters, as they in some countries have given excellent results, while in Montenegro there is none (not just in agriculture).

As it mentioned by Dragos (2012: 143) in order to accelerate the development process of rural and agri-food economy, the financial-banking institutions and the state have come to support the holders of fixed and circulating capitals by creating certain credits warranty funds aimed at taking over the financing risk where collateral warranties are not enough. Also, bearing in mind that Montenegro is a small country and its limited resources to support agricultural production it seems inadequate to use budget funds to encourage 34 different programs. In this way lack of resources disperse too much not providing adequate support for most of the programs. Budget support should concentrate on those programs in which Montenegro could achieve competitive advantages, and they are certainly: vineyard, olive, fruit and early vegetables production, cattle breeding and production of ecological food. Montenegro has good natural conditions for development of these agricultural industries.

The support system is focused almost exclusively on small producers. However criteria for support allocation will not facilitate the creation of large and mechanized agricultural households, which should be the basis for the development of competitive agricultural production. As Dethier and Effenberger (2011:23) emphasized increasing farm size is key for improved incomes in agriculture because it allows for the use of mechanization that has indivisibilities (with differences in access to credit by small and large farms favouring the latter), implying increasing returns to scale and higher profitability per hectare.

It is also important to resolve the issue and redemption of seasonal surpluses of agricultural products. This issue is particularly complicated in conditions when Montenegro does not have public warehouses for this purposes, nor stockpiles. Therefore, in the following years Montenegro should begin creating stockpiles.

Furthermore, Montenegro is a large importer of meat besides excellent conditions for cattle breeding. Thus, in the structure of agricultural production an important place should be given to the meat production, so it is necessary further improvements in finding solutions for the repurchase of meat, livestock fund extension, with parallel adoption of EU standards, to provide the export of meat to the EU market and to substitute imports. Increase of the funds for subvention of the production of meat has an effect on the competitiveness on the market of meat production, the opening drive of the meat industry, which strengthens the sub-sector of food production within the overall processing industry in Montenegro. Also, it is necessary to secure large livestock fund before joining the EU, in order to obtain subventions on that basis.

Since the previous analysis showed the continued downward trend in employment in agriculture, as well as population decline in traditional agricultural areas, as a result of the impoverishment of the agricultural population, a special set of measures should be aimed at stopping this trend. The measures that in this context should be taken relate to provide direct financial support to elderly households, which based their existence on agriculture, improvement of infrastructure quality (roads, water supply, electric energy) and improvement of quality of life in rural areas (construction of sports and cultural facilities, health centers, etc.).

Climatic conditions (droughts, floods, hail and the like) often cause significant damage to agricultural products and crops, livestock and other resources. Although some of these risks can be ensured within the regular system security, producers rarely use that option because of high insurance premiums, and damages of larger scale exceed capabilities of recovery by the producers themselves (National Programme for Food Production and Rural area development, 2008:41). Therefore it would be useful for state to participate in the cost of insurance.

The state should also consider tax incentives to agricultural producers. Considering that total amount of taxes levied on agriculture accounts for a small share in total taxes collected in the budget, tax relief could be a substantial support to agriculture, without any significant impact on the budget. World Bank study (2007: 98) has clearly shown that in countries where there is high taxation of agriculture there is a low growth of agriculture and the slow growth of whole economy.

An important condition for the improvement of agricultural production is a high quality product and the "conquest" of international quality standards. Bearing in mind that only a few Montenegrin manufacturers have international quality standards, government support would be beneficial to other producers to conquest these standards. Also, the state should engage in promotional activities and the creation of a special national brand, that is trademark (for products of high quality), which would allow that products to achieve greater recognition and greater success in the market.

Finally, of particular importance is to take special set of measures that would relate to harmonizing Montenegrin agriculture with EU rules. Through these measures it is necessary to start the activities on the harmonization of legal framework, policy reforms support and

restructuring, and institutional reform that would primarily entail the establishment of the Agency that would be responsible to implement incentive measures of agrarian policy, international programs support, administrative control measures etc. Also, Montenegro needs to be in the future more engaged in the use of available EU funds to support agricultural production, and that are for sure the funds provided by IPARD program.[7]

Concluding Remarks

Agriculture has been completely neglected for decades in Montenegro. The share of agriculture in creation of GDP decreased from 40% (after the World War II) to 7.7% in year 2010. As a result of agriculture neglect there is a range of negative effects: slower GDP growth, migration from rural to urban areas of the country, worsening of current account deficit, rising unemployment, the impoverishment of the countryside etc. On the other hand, many analysis show that in the following decades we can expect growth in demand for agricultural products and also increase of prices.

Accounting analysis showed that the key problem of agriculture is low degree in liquidity. Agriculture is not heavily indebted and has no problem with solvency. Also, in the last five years, the Montenegrin agriculture operated with a profit.

The key problems of Montenegrin agriculture are small farms, outflow of agricultural labor force to the cities, the low level of mechanization use and agro-technical measures, and low incomes as a consequence of the above-mentioned. Therefore the authors provide policy recommendations for improvement of Montenegrin agriculture.

Key recommendations relate to increased credit support to agriculture, increasing the amount of subvention, the granting of tax incentives, raising the level of technical equipment and application of agro-technical measures, and also improvement of general living conditions in countryside.

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POLJOPRIVREDA CRNE GORE: DIJAGNOZA I PREPORUKE ZA UNAPREDJENJE STANJA

Nikola Fabris[8], Igor Pejović[9]

Rezime

Crna Gora se u poslednje dve decenije okrenula uslužnom sektoru i poljoprivreda je u velikoj meri zapostavljena. Zapostavljanje poljoprivede se negativno odrazilo na kretanje BDP-a, zaposlenosti, deficita tekućeg računa platnog bilansa i pokrenulo je migracije iz ruralnih ka urbanim delovima zemlje. Autori su u radu postavili dva cilja. Prvi, da se uradili analizu stanja poljoprivrede sa makroekonomskog i računovodstvenog aspekta. I drugi, da se na bazi dobijenih rezultata daju preporuke za unapredjenje stanja u poljoprivredi Crne Gore. Autori su koristili bazu završnih računa Centralne banke Crne Gore za obračun najvažnijih racio indikatora. Ključne preporuke se odnose na kreditnu podršku poljoprivrednom sektoru, povećanje iznosa subvencija, odobravanje poreskih olakšica, podizanja stepena tehničke opremljenosti i primene agrotehničkih mera, kao i poboljšanja opštih uslova života na selu.

Ključne reči: *Crna Gora, poljoprivreda, racio indikatori, preporuke.*

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TERRITORIAL APPROACH TO REGIONAL RURAL DEVELOPMENT

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Summary

The paper reviews some of the key principles of a territorial approach to rural development and particular aspects of regional rural development. Some features of the EU Leader initiative were analysed as examples of the approach, and the social context and factors which may affect the application of these features in regional rural development were identified. The paper concludes by emphasising the need for different rural policies and preconditions for implementing the territorial approach. Moreover, available resources of rural areas were emphasised as well as the need for perceiving rural areas as (valuable) resources (not as issues), particularly in the context of Serbian rural development processes.

Key words: *regional rural development, territorial policies for rural development, LEADER initiative*

JEL: *Y800*

Introduction

Developed countries of the European Union – which have had a relatively stable agricultural policy – have gradually overcome productivism and exclusive sectoral support to rural areas in favour of the need for differentiated territorial policies in rural development. Strongly market-oriented agriculture has (in terms of food overproduction) caused a drastic reduction in the number of farmers in the total world population, the issue of their unemployment, and environmental pollution, which is a side-effect of industrialized agriculture. The perception that rurality is "no longer the monopoly of farmers" (van der Ploeg *et al.* 2000:393), "declining of agricultural dominance" (Murdoch *et al.* 2003: 60), and "decline of agricultural hegemony

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in many rural areas" (Marsden 1998: 108; Goodwin 1998:7) raise the issue of rural area heterogeneity in terms of the relationship between agriculture and the need for regionally sensitive and differentiated rural policy.

Centralized sectoral policies, mainly under the auspices of Ministries of Agriculture, are slowly giving way to numerous stakeholders in and out of rural areas such as environmental activists, regional development centres, regional authorities, local governments, various kinds of NGOs, and etc. Consequently, "other policy relations have emerged in rural areas" (Murdoch *et al.*, 2003: 60) due to the fact that these actors can now use different funding opportunities and thus "gain a greater role in the design and implementation of development schemes". Therefore, "spatial and policy differentiation appear to reinforce one another within rural areas as particular policy structures interact with given socio-spatial formations" (*ibid.* p. 61). According to some authors (Marsden 1999: 503), new circumstances in rural areas reveal the need for a "new political and social economy of rural space" based on the reconsideration of some of the basic principles of "rural social science" (*ibid.*).

Under new conditions of policy making in regional rural development, it is of great importance to adapt (transform) current institutions, establish new institutions, and strengthen their overall capacity, accountability and efficiency. Adequate "institutional architecture" enables the successful social interaction of local population in order to achieve their own development interests, which are coordinated with "external" institutions and actors. Success appears as an effective articulation, promotion and then – eventually – (social) action in favour of achieving the collective interest of the specific territory – region. This (social) action, therefore, should be in line with the potentials for development which ought to be effectively realized whether economic, socio-cultural or environmental, as "environmental management has an obvious territorial dimension" (de Janvry and Sadoulet 2007: 18).

In the paper, we will present some relevant characteristics of a territorial approach to rural development and underline the importance of regional development as well as the connection between regional and rural development. We will also analyse some experiences of the LEADER initiative (French acronym, standing for '*Liaison Entre Actions de Développement de l'Économie* Rurale', meaning 'Links between the rural economy and development actions'). This initiative represents an interesting stimulus to processes in the local (rural) economies all over the EU and has caused a lot of positive effects on the development of EU rural areas. We assume that such experiences are valuable for Serbia and in the final part of the paper we will emphasise the importance of placing territorial rural development on the agenda of the Serbian development policy. We conclude with the factors which may influence the local/regional governance in Serbia and countries which may have a similar national development context.

Territorial Approach to (Regional) Rural Development

The issue of regional rural development is clearly connected with the territory, which may not be defined by administrative boundaries so much as by functions, a relatively homogeneous and integrated economy, and socio-cultural identity, which form its competitive advantage over other areas or regions. In the social theory which deals with the issue of regional development, there is a frequently used concept of *territorial competitiveness*, which, in addition to the economic meaning "*the ability to withstand market competition*", means providing environmental, social and cultural sustainability of a given area. Some approaches to this issue (Leader 1999: 5) discuss four dimensions of territorial competitiveness: "social competitiveness" or the ability of participants to act effectively together on the basis of shared project concepts encouraged by cooperation between the various institutional levels; "environmental competitiveness" or the ability of participants to make the most of their environment by making it a "distinctive" element of their area while ensuring that their natural resources and heritage are preserved and revitalised; "economic competitiveness" or the ability of participants to create and retain the maximum added value in areas by strengthening the links between sectors and turning their combined resources into assets for enhancing the value and distinctiveness of their local products and services; "positioning in the global context" or the ability of participants to find an area's role in relation to other areas and the outside world in general, in such a way as to develop their territorial plan to the fullest and ensure its viability within the global context.

In addition to the mentioned dimensions, some authors also add and emphasize the political and institutional dimension (Rauch *et al.* 2001) as well as cultural dimension of regional rural development (Murdoch *et al.* 2003). Ray (Ray 2006: 17) speaks of "culture economies", the idea which comes from three sources: the changing nature of post-industrial consumer capitalism, the trajectory of rural development policy in the EU, and the growth of regionalism as a European and global phenomenon. This approach identifies culture as the basis of a territorial identity with a number of markers such as different languages and dialects, foods, folklore, crafts, historical heritage and the natural (specific) environment. Thus, a territory, in terms of production, refers to the nurturing and (or) construction of territorial identities which are valorised through a variety of products and services offered to users of rural areas and "consumers". The "commoditization" of rurality, or the "commoditized" rurality, stands for both tangible and intangible conceptualization of rurality, and it certainly has constructivist bases and consequences (like branding in general). The question is, however, whether these structures marginalize problems which exist in rural areas (poverty, deprivation, and the like).[2]

Sociologically, "territorial competitiveness" should not be perceived from a purely economic viewpoint as a tool for increasing the competitiveness of a region in global (market) terms. It should be perceived as a framework wherein the social actions and decision making of "local" population occur. Those actions and decisions should be based on the directions of their will and aspirations as well as regional spatial proximity. Regional spatial proximity

2 Regarding that, see Hillyard 2007: 60-62, especially study of Cloke et al. 1994, to which the author points.

should be regarded as "the experiential and structural base for the development of awareness and responsibility", "the competence for social action and management", the possibility of intra- and inter-regional cooperation and exchange of experiences (not strengthening the autarky and (or) protectionism), and the way to minimize the effects of the impact of global markets, and the like (see, Müller 1998: 185-189).

Rural development is a broader framework of regional development because it includes a number of sectoral approaches alongside a regional approach, as well as local level approaches. The term rural development may mean both planned government "intervention" and positive social change, which has more or less spontaneously occurred during the historical development of rural areas usually influenced by the modernization, industrialization and urbanization of society. Some authors would disagree with "spontaneous" change and would emphasize "designed change... that is deliberately induced, not naturally evolving" (Moseley 2003: 4). The need for intervention, in terms of rural (development) policy, stems from the necessity of reducing poverty and social inequality of rural population, and also from the need for a decrease in development disparities of the whole territory of a certain global society. Although the *reduction in rural poverty* is often the foundation of the definition of rural and regional rural development (Rauch *et al.* 2001; similar de Janvry and Sadoulet 2005), some authors (especially Rauch *et al.* 2001) argue that it should be the *basic goal of rural development*, both in developing and in developed countries (de Janvry *et al.* in 2002, according to Bogdanov 2007: 37). They explicitly emphasize regional rural development as essentially oriented towards people with the aim of reducing mass rural poverty, which can be achieved by the optimal development of (previously mentioned) territorial dimensions, within a smaller or larger territory. Although we could accept the systematization of the three main conceptual approaches in strategies of rural development: sectoral, territorial and human (oriented to the rural population), the sociological perception of this issue still requires the conclusion that in the territorial approach, which is oriented to the potentials, *i.e.* the competitiveness of a particular area, it is basically an approach which targets the widely perceived *ability of actors / population* in certain rural areas to identify and utilize resources (along with social institutions and organizations), and overcome the limitations of the territory in which they live and work with their collective action. In that sense, reducing mass rural poverty might be expected as a consequence of regional development.

The importance of "local" rural development was announced in the late 1980s, in the document of the European Commission - *the Future of Rural Society*, which emphasized the need for external support (rural development policy) to endogenous potentials of rural areas. Within the European Union policy, the endogenous potentials and local-territorial concept of rural development have represented a step forward in understanding that agricultural policy - which dominated rural policy together with the other usually separate and often uncoordinated sectoral measures - did not give the same results in various rural areas in terms of reducing poverty and inequality. Thus, a key issue of considering the reasons why some planned social change and projects did not contribute to the development of certain areas has emerged. In a sociological sense, one could say that the complexity of rural development has been perceived, first of all at the level of planning and understanding of rural development, *as a process*. This complexity revealed issues

such as social networks, interactions, power relations among actors and institutions, participation, local resources, knowledge/skills and capital which rural areas *have* in different amounts and *use* in different manners for their development. In the sense of a territorial approach, these and other questions have emphasized understandings that rural regions are socio-economic units which have their own structures and actors (institutions, formal and informal social groups, potentials and constraints for development) who use available resources in different manners.

In that sense, region as planning and development category (not only political and administrative), should provide a place for: systematic development of the network of settlements, appropriate economic and spatial redistribution of economic capacities, subsidiary distribution of power and authority, support of local-regional initiatives, and responsibility for certain development activities. Although there are regions of different sizes (as well as local government/municipalities of various sizes), region is always considered as the optimal framework for integrated and sustainable socio-economic, demographic, cultural and environmental development of a specific territory, and the "best compromise" between fragmented local initiatives and "distant" global national plans of development. Regional position provides optimal position for the potential *synergistic effect* of local development initiatives, along with development support provided by the system of global (national) measures. It implies the constructive networking on the level of internally perceived common interests, needs and opportunities for development, linking of mutual initiatives and social actions, and using (or constructing) social capital for the achievement of sustainable socio-economic and environmental development in line with desired development goals.

Territorial Approach to Rural Development: the Example of the EU LEADER Initiative

The optimal utilisation and operational development of potentials in a specific rural area depend on a range of elements which represent the components of each of the previously mentioned dimensions. These components operationalize general dimensions of the regional rural development and can be used for more specific analysis of these dimensions. A good example of this policy is the EU LEADER initiative, which has represented an interesting "laboratory for rural development" for almost two decades. The initiative has a lot more symbolic and ideological importance than financial, which is rather minor in comparison with other measures of rural policy. This initiative was launched in 1991 comprising 3 stages: LEADER I (up to 1994 as a pilot program), LEADER II (1994-1999), LEADER+ (2000-2006). Although LEADER emphasizes the "bottom up" and territorial principle of an endogenous (participative) approach to socio-economic development of rural communities, it might be said that this approach "is not everywhere entirely novel, because a number of countries can point to historical and contemporary examples of its introduction" (Ray, 2000).

LEADER is now an integral part of EU rural development policy, along with other similar funds like SAPARD (IPARD), PHARE, ISPA or the national programs similar to LEADER which

are focused on rural development in local rural communities (*POMO and POMO+* Finland; *PRODER* Spain; CTE France ; *REGIONEN AKTIV* Germany, etc.). All these programs in the EU and member states, target mainly the involvement of local (regional) "capital" and local stakeholders in developing long-term potential of their areas, implementation of self-designed strategies, preservation of natural and cultural resources, village renewal, improving the economic environment (new jobs) and organizational capability of local communities. In this sense, "*co-operation on several levels*" is a key component of such concepts. As a specific method for providing support to rural development, the LEADER approach is in the CAP (2007-2013) perceived as one of the four axes which will be co-financed by the European Fund for Rural Development. While the first three axes are "vertical" (1. competitiveness, 2. environment and the countryside, 3. economic diversification and the quality of life), LEADER, as a horizontal measure, is based on the following eight principles: *local features* (these features are represented by local groups and local development strategies and include: 1. area-based approach, 2. bottom-up approach, 3. local group (partnership approach), 4. innovation, 5. multi-sectoral integration), *trans-local features* (these features emerge from interactions between local groups and their respective strategies including 6. networking and 7. trans-national cooperation), and *vertical features* (these features are represented and implemented by the programming authority and provide the governance framework in which the local groups carry out their activities including 8. decentralized management and financing (EU Commission 2003: 14)).

The positive experience of the first two LEADER initiatives led to continued funding in the form of LEADER+ measures for the period 2007-2013, during which LEADER will evolve from a pilot initiative to the fourth axis of rural development in the EU CAP. According to some opinions, LEADER was an "effective initiative" which also "contributed to the sustainability of development processes at local levels" and LEADER II measures have led to the "creation of safeguard of 100,000 permanent jobs" in European rural areas and over 1,000 LAG (Local Action Groups) across Europe, which are connected and share experiences of their development projects (European Commission 2003: 22-24; Shucksmith *et al.* 2005: 110).

However, since LEADER and similar measures across EU actually represent "*exogenous initiation of local activism and dynamics*", it is important to avoid the danger of mixing cause and effect. Estimating the impact of LEADER, Shucksmith *et al.* (Shucksmith *et al.* 2005: 110) claim the following:

"LEADER is an instrument to stimulate processes in the local economy rather than to promote investments". According to these authors, successful implementation of multi-sectoral integration is the effect of certain preconditions and external influences such as: favourable institutional and administrative context ("institutional thickness"), successful and diversified local economy, vital, dynamic and representative partnerships and strategic orientation of the local action plans, rather than the effect of LEADER activities. LEADER activities have contributed to the sustainability of development processes at local levels and they have proved to be "adaptable to different socio-economic and governance contexts and applicable to small-scaled area-based activities in rural areas"; they induced the

responsibility of local partnerships and raised the awareness of strengthening strategy and cooperation within the regions, etc. (ibid. 108-110).

However, LEADER activities encounter numerous problems and obstacles such as the obstructive influence of interest groups, the issue of partnership quality in local action groups, administrative problems in project implementation, a relatively low participation of women in local action groups, and the problem of institutional underdevelopment, which can be an obstacle to successful development efforts.

Processes within LEADER local partnerships and their consequences have been widely researched and the results indicate many specifics which are conditioned with socio-economic, historical and political contexts present in different countries during the researches (see, Moseley (ed) 2003; Bruckmeier 2000; Buller 2000; Osti 2000; Esparcia 2000; Thuesen 2009; Furmankiewitz *et al.* 2009; Kovach 2000). Many LAGs were seen as a "tactical response to funding opportunities" (Moseley (ed) 2003: 155) and local authorities played a major part in creating appropriate partnerships... but "in many areas, key individuals – with energy, good contacts and a talent for making things happen - also played key roles (ibid; also, see Osti 2000).

Many LAGs, as local partnerships, have in fact been strongly influenced by official regional and other governmental structures as in Germany (see Bruckmeier 2000), France (see Buller 2000), Spain (see Esparcia 2000), and especially Poland (Furmankiewitz *et al.* 2009) and Hungary (Kovach 2000). Strong influence of traditional elites on the LAGs was often the case in many of the mentioned countries.

Also, good historical background in regional development (in the case of Germany, see Bruckmeier 2000) and rural areas that already have had strong historical and cultural identity (in the case of France, see Buller 2000), made the LEADER initiative more effective in the realization of development goals. The Italian examples show that areas which have already had "traditional solidarity", "aggregative capacity" and strong social capital, together with key individuals (charismatic people in key positions), have been more effective in the development of areas.

The LEADER approach, which could serve as a paradigm of the territorial principle in rural development, identifies the following basic components of four dimensions of territorial competitiveness (environmental, economic, social competitiveness and positioning in the global context): human resources, physical resources, image/perception of the area, markets and external relations, activities and business firms, governance and financial resources, know-how and skills, culture and identity (Leader 1999: 22, 23). Each of these components can, in a certain way, contribute to the territorial capital and competitiveness, and they are more or less linked with some of the mentioned dimensions of territorial competitiveness (see, Leader 1999). It is, however, clear that their separation (see, *ibid.*) is rather analytical by nature due to correlations with the main (corresponding) dimensions, although possibilities of multiple correlations are often the case.

The Need for Territorial Rural Development Policies in Serbia

The situation in rural areas in Serbia, which account for 85% of the territory and 55% of the population (with the density of 63 inhabitants/km^2), is very difficult according to many relevant indicators. There are many problems in rural areas and it is hard to break the vicious circle of underdevelopment and poverty, especially with the lack of relevant policies and deagrarianization, a process which has always had its economic, social, demographic, cultural, political, and other aspects. The lack of competitiveness of the Serbian agriculture, crowding out of "the agribusiness market arena" by agrarian population, undeveloped rural economy and many underdeveloped rural areas further complicate the picture of the current and future development and survival of Serbian villages. Poverty rates of rural areas in Serbia are twice as high as the ones in urban areas (see Veselinović, Mićić, Miletić, 2012). The employment rate in agriculture is among the highest in comparison with the EU (about 23%) and reflects a pervasive importance of agriculture in the national economy and a low level of diversification of economic activities in Serbian rural areas, which results in a lack of employment opportunities (MPŠV Republike Srbije, 2009: 6)

For decades, the issue of depopulation of rural areas has been one of the central issues associated with rural areas in Europe and Serbia. This complex issue entails many "hot spots" such as youth migration, unemployment in rural areas, urban concentration, and the like. The situation in Serbian rural areas is further complicated regarding high percentage of unemployment at the national level, social position and unemployment of young people, long-term social crisis and bad economic situation (see Antevski, Petrović, Vesić, 2012).

The concept of *governance*, as an example of evolution in theory and practice of rural development, is primarily applied in developed countries depending on the achieved economic, democratic (political) and institutional level of development. In countries with lower levels of overall development (as in Serbia), the discourse on governance is rather reserved for the (near or distant) future. In underdeveloped and developing countries (like Serbia), the essential discussion, in theory and often a lot less in the development practice[3], is actually on the level of transition from the sectoral to multi-sectoral policy measures, and from the centralized management to eventual local co-ordination of (multi) sectoral measures.

The analysis of the development of rural policy and theoretical approaches to policy discourse and social sciences of developed countries in this paper aims to be useful for Serbia:

- to *indicate possible different solutions and good practice in rural development*, which could be applied in Serbia (on the basis of principles and possible structural and institutional similarities, as well as modifications of useful experience);

3 Attempts to deal with optimal regional (rural) development are in fact between an analytical use of the governance concept and normative claims of how to steer regional development in the best manner (Böcher 2008: 377), because the analytical discussion of what is really happening in regional politics often includes normative perspective of how regional policy could be effectively and efficiently shaped.

- to *point out the advantages of the concept of regional development*, which must be incorporated into the strategy of rural development *having in mind huge regional disparities affecting the socio-economic and political context of Serbia*. The benefits of regional development must be used along with (multi)sectoral measures of rural and agricultural development, and should not be endangered by politicization in everyday disputes of political "elites" in Serbia;
- by emphasizing these questions one indicates *the need for their scientific analysis* in order to investigate the possible prerequisites for application of similar principles in rural development;
- to gradually *reconstruct the issue of rurality in Serbia, as a priority and need for overcoming the rural-urban dichotomy which implicitly includes the perspective of the traditional-modern paradigm (rurality* referring to *residual traditionalism which should be surpassed*). This reconstruction might lead to rurality which is more attractive and valuable for the society in general, and makes better use of its own (rural) resources.

Conclusions: Conditions for Regional Rural Development Policies in Serbia

By means of new approaches to rural development policies at local and regional levels, the theory of rural development in developed EU countries not only transcends the issue of sectoral and (or) multi-sectoral measures, the issue of territoriality and the role of local communities in rural development, but it strongly emphasizes the new concept of horizontal and vertical integration within the local community, its formal and informal institutions and structures, and integration with external regional, national and other factors, as well as institutions and structures. Very often these ideas are summarized in the concept of local/regional governance. To what extent such integrations are really possible depends on many factors (which always have to be considered in Serbia and countries with similar problems in the national development context) such as:

- the willingness and capacity of a society for a kind of (democratic) decentralization (global/national context);
- the development of national economy, social and political context, the level of general (under)development as a macro framework of the development processes;
- the inherited institutional architecture and the historical, political and cultural (local-regional) context, the existence of mezzo-level administrative structures (for example, development of regional institutions), readiness (knowledge) and (institutional) ability of local (self-)government to effectively perform its functions (the existence of all necessary elements to constitute *governance* in theory);
- the motivation and existence of real options (permanently "open" channels of communication) for the true (democratic) participation of the rural population, *i.e*., the willingness of local governments (elected political leaders and (or) traditional elites) to assume the (political) accountability for decentralized management and coordination of complex interactions with many relevant actors and institutions for the general sake,

and not their own narrow political interests and calculations;

- the strength of local and regional economies to fund development programs and projects which are relatively independent of financial transactions from the national (global) level (sustainability in terms of degradation of dependency syndrome from the government, investment of their own efforts to reduce poverty and boost socio-economic vitality of local communities in partnership with many other economic actors - businesses, other local governments, various funds and projects of cooperation and how etc);
- the sustainability of development processes independent of changing local, regional and (or) national political structures, as well as long-term and strategic approach to planning (regional) rural development.

The regional perspective of rural development could promote the awareness and need for different forms and types of rural-urban links and qualitatively different integrations, and thus the development of rural areas in Serbia. At the moment, it is very hard to discuss the implications of regional rural development policies in Serbia due to the fact that Serbia is (still) a strongly centralised and politicized society with almost non-existent effects of regional development policies and strategies, and modest effects of local and regional initiatives. We consider that efforts should be made in order to empower local governments (municipalities) in Serbia and crucial steps forward in development might be enabled by effective local governance and integration of their (development) initiatives into regional development actions. This is important due to the fact that the development of many municipalities and regions in Serbia depends on historical, socio-economic and cultural characteristics, and that the level of regional disparities among municipalities (and the regions) in Serbia is very high. In that sense, we consider that the future progress in regional (rural) development might be identified and monitored primarily on that level. However, it is utterly important that this development occurs in accordance with heterogeneous characteristics and resources of different municipalities and regions (local people, culture, food, history, landscapes, nature and biodiversity, alternative types of energy...), which centralized policies mostly fail to recognise and use in an appropriate manner. Also, regional (rural) development must represent simultaneous infrastructural, economic, social and political integration (inclusion) of rural areas, their population and economy into global society. In that sense, it is crucial to deal with the reconstruction of rurality which could consequently lead to perception of rural as more attractive, more valuable for society in general, and making better use of existing rural resources.

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TERITORIJALNI PRISTUP U REGIONALNOM RURALNOM RAZVOJU

Dejan Janković[4*]

Rezime

U radu se daje prikaz nekih od osnovnih principa teritorijalnog pristupa u regionalnom ruralnom razvoju. Kao primer ovog pristupa analizirane su pojedine osobine LIDER inicijative i, u tom kontekstu, identifikovani su socijalni kontekst i faktori koji mogu da imaju uticaja na primenu ovih osobina u regionalnom ruralnom razvoju. U radu se zaključuje o potrebi za diferenciranim ruralnim politikama i preduslovima za implementaciju teritorijalnog pristupa u ruralnom razvoju, kao i u vezi sa postojećim resursima ruralnih područja i potrebi percepcije ruralnih područja kao (vrednog) resursa (a ne kao problema), naročito u kontekstu procesa ruralnog razvoja u Srbiji.

Ključne reči: *regionalni ruralni razvoj, teritorijalne politike ruralnog razvoja, LIDER inicijativa*

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THE ROLE OF THE NATIONAL BANK IN CREATION OF PUBLIC DEBT OF INDEPENDENT KINGDOM OF SERBIA

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Summary

The time characterized by a public debt phenomenon in modern Serbia has been attached to the end of the XIX and the beginning of the XX Century, when the battle for independence had caused growth of Serbian foreign debt. It is considered that the state's contraction of debts at the National Bank[4] has been old as well as the National Bank institution by its self. In other words, more before the Serbian National Bank's counters were opened, there was made the state debt by approving the loan of 304,216 dinars in gold, on backing of the state treasury bills. Therefore was made the initial business transaction of the bank, which was done before its regular business activities.

Key words: *loan, public debt, the National Bank.*

JEL: *H13, E4*

Introduction

Each state's economic system stability represents a top task in its functioning and survival. In order to provide it, a special attention of the state should be paid on the state's contraction of debts. Besides its use for funding the deficit in the budget, the public debt represents also an instrument of economic policy, which has its fiscal and monetary function, so in that way it has an effect on the entire economic system of the state, too.

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4 "The National Bank should not be a source for the state incomes boost. It can become such source only indirectly: by in time influence on regular development and partition of credit, which will fertilize and increase handicrafts and trade, and in such way, strengthen those original sources which provide income for the state treasury." (Dr Lazo Pacua, Minister of Finances in parliamentary search of the Law on the National Bank, 1904, *Spomenica Narodne banke* 1884-1934, p. 38)

Taking into consideration these facts on public debt, and also knowing that it is the main lever of the state's central bank monetary system, we have made up for perceiving the role of the National Bank in creation of the public debt of the independent state of Serbia.

If observes the period from 1878 to 1903, the main reason for oversized state's contraction of debts at the National Bank was constant budget deficit for exactly 25 years. The budget imbalance was covered by assets from 2 sources: debiting on domestic (internal) plan, primarily in own issuing institution and by taking the external, i.e. foreign credits. Domestic sources were not sufficient the most often, so the state also used the foreign credits.

Period of the national (state) contraction of debts at the National Bank

When it is about the national contraction of debts at the National Bank, we can notice two periods: 1) period from the Bank foundation to 1903, and 2) period from 1904 to the beginning of the WW I.

After the foundation of the National Bank, the contraction of debts has mostly brought down to a discount of treasury bills periodical loans based on debenture stocks' pledge. The share of national debt in money circulation was amounted 38,91% in 1884. After this year was relatively decreasing the national debt in relation to the total issued amount of money. In 1890, besides the discount of treasury bills and loans based on debenture stocks was included new forms of national crediting with the National Bank: approved credits for repurchase of salt monopoly (15 million dinars) and exploitation of the national railway (3 million dinars), with interest rate of 5%, then the loan to Monopoly Administration in silver for tobacco pledge and was issued a guarantee for Pirot district. In the next year was approved a loan for the Ministry of Finances in gold and silver, in amount of 300,000 dinars, so the national debts till 1897 were amounted 20-30% of totally issued notes. There should also mention the credits meant for municipalities, counties and districts. During 1885, the National Bank had approved the loan to Smederevo municipality of 200,000 dinars for building a port, with term of payment of three years. In 1893, the loans were given to the municipality Smederevo (300,000 dinars), the municipality Sabac (200,000 dinars) and the municipality Nis (250,000 dinars). To Belgrade municipality was granted the most credits, and the first credit was amounted 176,000 dinars, approved in 1886. The second credit was granted to the municipality Belgrade in 1891 and was amounted 2,3 million dinars, with interest of 6%, based on pledge of municipal excise duty incomes. In the period from 1892 to 1895, the loans were approved in amount of 950,000 dinars, while the conditions were as aforementioned. The credit was paid off from the excise duty, and the payment was every eight day. The next credit was granted to the municipality Belgrade in 1910, and was amounted 2,5 million USD, and was paid off in the following year. The last loan to the municipality Belgrade was approved during the WWI, when the Bank was in exile in Krusevac, in amount of 1,2 million dinars. Those credits were meant for funding the communal services and had the investments character. Frequent and justified criticisms were referred to the bank because of those loans, which had not been anticipated by its sphere of action.

"In order to cover up in advance planned budget deficits, Serbian Government was resorting to various aspects of provisional loans during '80s. Innovation since 1883 was introduction of legal possibility for using short-term loans in form of coupons, i.e. certificates of deposit. The certificates of deposit are necessary mean for keeping the continuity of the Treasury function and cannot represent a danger for setting up the budget balance, when they use for anticipating real, sure income within one budget year. It means that, by using the certificates of deposit, the treasury surpasses short-term periods of incompatibility in dynamic of the budget incomes intake in relation to the needs of the budget expenditures in one budget year. Based on these short-term loans of the state, usually with the Bank of Issue, occurs, so called, floating public debt, in duration of 3-12 months. This debt should be settled from regular, later on gathered tax incomes during the same budget year. However, if with these short-term loans covers the budget deficit, which occurs as a definite result of budget realization in one budget year, there appear, so called, financial floating debts, thanks to which the budget deficits transfer, *de facto*, from one to the next budget year."[5]

On export trade development a direct influence had underdeveloped monetary and credit system. Till the Serbian National Bank was founded, in Serbia have functioned seven monetary institutions, Fund Administration and county savings banks. All mentioned was not enough to satisfy the needs of monetary and credit turnover. The amount of money was not sufficient, credit was hardly granted, the credit interests were too high, while usurious interest was up to 50%. Owing to that, there appeared a need for founding one central issue and credit institution, which would keep in basements silver and gold withdrawn from circulation, according to which would issue proportionally more paper money. After its foundation, the National Bank reduces credit price in the country. As already said, in the first year of its work, the National Bank had come across many obstacles, so it could not fulfil, at once, all its basic functions, primarily crediting.

With the Budget Law for the year 1883, the first time was included a paragraph, after which was allowed to Serbian state to use certificate of deposit[6]. Until then, Serbia could take short-term loans only in private monetary institutions in the country and abroad, or in foreign issuing institutions. With constitution of national issuing institution, the Treasury took the loan of 300,000 dinars in gold based on quarterly treasury bills. The credit was realized by the National Bank from capital it had received on favour of first payments for its stocks. "In paragraph 6 of the Law on the National Bank was anticipated that the Bank can, on the account of the state, to do the following activities: discounting and re-discounting of Serbian Treasury orders and state coupons; giving loans on pledge of Serbian state debenture stocks of any kind (debenture, coupons, etc.), as well as debenture stocks with guarantee of Serbian state; mediation in realization of loan in interest of the state. Starting with the first short-term loan of 300,000 dinars in 1883, the state had lavishly got into debt with the National Bank, during '80s. Together with short-term loans in the national issuing institution, the state started to issue also a mass of coupons to private persons and different

5 Gnjatović, D. (1991): *Stari državni dugovi*, Yugoslav review, Belgrade, p. 47.

6 Milojević, I. (2011): *Revizija izvršenja budžeta*, Accountancy, Vol. 55, no. 1-2, p. 81-88.

monetary institutions. The coupons sum was determined by the Budget Law, but was always exceeded, and the coupons were used for covering all possible expenditures. Exactly due to uncontrolled issuing of the coupons, there came to accumulation of temporary debts and chaos in managing the state finances."[7]

"Thanks to conversion of permanent national debts in 1895 was decreased a total annuity of permanent national debt, but temporary debts issue was not solved. In the period 1895-1900 were alternating a progressive, radical and neutral Government, but none of them was successful in solving the problem of the national debts. Although the state incomes have been increasing, they were surely not sufficient to cover huge new expenditures of the Serbian state. The incomes of the Serbian state were increasing at the end of 19th Century primarily thanks to incomes growth from already existing sources. At first, a reimbursement of direct taxes and surtaxes was done in more organizing and more regular manner. Secondly, the state monopolies were providing increasing incomes, as due to increase of salt and tobacco price, as well as due to introduction of new monopolies."[8]

The most of military expenditures were for military acquisitions. The balance in the Balkans was considerably violated by Greek-Turkish conflict, in 1897, which has an effect on Serbia to put an accent on its military equipment. The military acquisitions have demanded additional assets, which had been available only as a loan. The foreign credit was hardly available owing to a fact that the credit of the Serbian state never had such a bad rating at the world stock markets. There was a discontent of numerous creditors regarding the decisions of the Carlsbad arrangement. King Milan becomes a commander of active army in 1897, and his will was to modernize[9] the army at all costs. The state budget was chronically scarce, so the state, due to impossibility to get the credit abroad, turned to domestic capital.

Very unfavourable year for Serbian state and economy was 1895. That was the last year in which was decreasing the price of Serbian wheat at European markets, due to wheat import from America. Very important Serbian export product, Serbian plum, was badly rated at the world market. Owing to lack of money, the import had been decreased[10]. "Difficult circumstances in hog breeding had forced the government to take into consideration how could Serbia finally get free from Austro-Hungarian economic dependence. The only solution was not to export live hogs, but butchered and processed and, in that way, to take

7 Ibidem, p. 48.

8 Gnjatović, D. (1991): *Stari državni dugovi*, Yugoslav review, Belgrade, p. 75.

9 „After the acquisition of shotguns, there followed the acquisition of horses and cannons. The state budget has become more and more burdened by military expenditures. Due to huge military acquisitions, the budget expenditures of the Military Ministry have exceeded the state debts paying off. After the Karlsbad arrangement, the state has paid 17,6 million dinars for the state debts, while the military expenditures have increased to 20 million dinars." (Jovanović, S. (1931): *Vlada Aleksandra Obrenovića*, book II, Geca Kon, Belgrade, p. 46.)

10 Annual reports of the Privileged National Bank (1898) for all years from 1890 to 1895, The State Mint of the Kingdom of Serbia, Belgrade, p. 19.

away from Austro-Hungarian a blackmail instrument. That is to say, there was inevitable to begin finally with slaughterhouse construction. After passing the Law on State Support to Abattoir Companies, in Belgrade was rapidly created, at the end of 1895, a joint-stock company for raising the livestock square and big slaughterhouse in Belgrade – Serbian Joint-Stock Company for Livestock Slaughter and Processing. In order to provide livestock transport from the Company to the Belgrade railway station, the Ministry of Finances was decided, in 1897, to take a loan of one million dinars in gold, for building the railways. The government then did not even try to find the assets from abroad, appreciating a significance of certainty of this economic project realization."[11] There was authorized the Administration of National Debts at the Ministry of Finances to collect assets and to pay off this loan. Especially should mention that the loan for building the local railway had met an important support at domestic monetary institutions. A special part in the loan realization was played by the Privileged National Bank, by purchasing one third of debenture stocks. Other two third of debenture stocks were purchased by other monetary institutions (66 of them), with paid capital of 15.1 million dinars. The National Bank was indirectly supported the loan realization when it is about the other monetary institutions, too. In other words, the National Bank, by crediting the monetary institutions, was helped in foundation and development of these institutions, while they become sufficiently powerful to overtake the realization of two third of the new state loan.

Difficulties with the north border were present furthermore; the border was closed for more than a year (from May 1895 to July 1896). The assets for slaughter railway construction were relatively rapidly found (mentioned loan for construction of the local railway); nevertheless, the construction of slaughter square and slaughterhouse was prolonged due to lack of stockholders' money. Around 110,000 dinars were missing to the Association for Livestock Slaughter and Processing, so it had turned to the National Bank with request to purchase a part of unpaid stocks in amount of 50.000 dinars. The National Bank responded again to the request and supported the Serbian Joint-Stock Company for Livestock Slaughter and Processing by purchasing 2,000 stocks of the company.

History of Serbian currency issue

To understand this problem, it is necessary to turn to the history of Serbian currency issue, we already aforementioned. Creation of Serbian national currency system was initiated during prince Mihailo's reign, in 1868, by forging the copper money. The system of the Latin Monetary Union was adopted by the law in 1873, which had imposed a double

11 Gnjatović, D. (1991): *Stari državni dugovi*, Yugoslav review, Belgrade, p. 77.

standard[12]. Serbian monetary unit becomes a silver dinar, which had one franc parity. Finally, a creation of Serbian monetary system was crowned by the Law on Serbian National Money in 1878 when were founded gold coins with value of twenty and ten dinars, silver coins of five, two, one and a half dinar, as well as a copper money with value from 10 hundredth of a dinar, as the biggest, to 1 hundredth of a dinar, as the smallest. " Though the system of the Latin Union has served as a pattern to the monetary system of Serbia, but by the law in 1878 had already departed from its principles, thereby had been limited a turnover of silver five-dinar coins to 500 dinars, and smaller silver coins to 50 dinars in one payoff. In that way, essentially, the Serbian monetary system had partially adopted a gold standard, i.e. a single standard."[1314]

The gold standard has signified adoption of gold as universal value criterion. It is well known that, in the past, had alternating a domination between silver and gold, as the value criterion. In the second part of the 19th Century had dominated the gold standard (1850-1870), and later the double standard (1870-1895). At the end of the 19th Century had win the gold as the value criterion, and it had dominated in international economy until the WWI. "In time when Serbia *de facto* had departed from the Latin Union principles, around the world had considerably waged a struggle for the double standard. Vladimir Jovanovic, the Minister of finances of that time, had stated, as a main reason for adopting the gold standard, rapid decrease of silver value at the world market.[15] Together with the foundation of the National Bank has been expected further tightening of the gold standard, however, the bank notes of 50 and 100 dinars, exchangeable for gold, had not been accepted in the monetary turnover. In 1885 there was a fear that the central bank was becoming a common credit institution. The bank notes in gold did not retain in turnover, while they were of too high value. The problem of monetary resources has appeared especially shortly before the Serbian-Bulgarian war (1885). Since that year, Serbia was actually abandoned the gold standard and was returned to the principles of double standard. The note of 10 dinars payable in silver, which has been put into circulation in 1885, has completely taken over the domination. It was already mentioned that an agio, as an additional payment for gold, had rapidly increased in 1893. The government had an attitude that the agio was a consequence of large amount of silver coins in circulation. However, connecting the monetary circulation with metal backing has denied the government's opinion that the agio depended on money amount in circulation. The circulation of notes in silver

12 Double standard is a monetary system in which are two metals, gold and silver, monetary metals, while a relation of their mintage rates was legally determined. Both gold and silver coins were made to the same monetary unit (considering it was the same monetary system), they were forged in full value (according to determined mintage rates), were currency money and unlimited payment facilities. Economic Encyclopaedia (1994), Savremena administracija, Belgrade, I Vol, p. 957.

13 Single standard is a monetary system in which existed just one monetary metal, out of which was forged full value money. The single standard exists also when, along with forging, outlay bank-notes which are exchangeable nominally for full-value forged money.

14 Gnjatović, D. (1991): *Stari državni dugovi*, Yugoslav review, Belgrade, p. 79.

15 Ibidem, p. 79.

was extremely high in autumn 1893, when it had achieved the sum of 30 million dinars. The National Bank had succeeded, at the end of 1893, to decrease the circulation to 26 million dinars. With the law in 1896 was limited the issuing of bank notes in silver to 25 million dinars. Thereby had stopped a danger of bank notes withdrawal, nevertheless, by maximizing the amount of bank notes had significantly influenced the bank's flexibility. This amount was sufficient in common circumstances, but in autumn, in time of greater export, it was not enough. Traders – exporters had consulted the National Bank, while they had needed the money for livestock, plums, hide and wheat repurchase from farmers. Due to regulated sum of silver notes in circulation, the National Bank could not help the traders in export season. Crediting was suspended on August 20th 1897.

The end of the 19th Century was very unfavourable period regarding the currency issue, there should urgently pay a part of temporary debts, as well as the wages of employees and pensions, which had been late. The government had unilaterally passed the Loan Law at the Privileged National Bank in 1898, in amount of ten million dinars. The bank did not have this amount of money, so the government ordered to the bank to increase the circulation of bank notes in silver, for the loan's nominal amount. This form of loan issuing had negative consequences on tough economic situation in the country and on the currency circumstances.

"In March 1898, according to its decree, the state had raised a loan at the Privileged National Bank, in amount of 10 million dinars in bank notes in silver, by parity, with payment term of 10 years and rate of interest of 2%. As a guarantee for the loan payoff had served a non-pledged part of the state's excise tax income. Entire loan amount was used for payoff of the most important temporary debts. By the Decree on Loan was determined that the Privileged National bank must every year, till the end of the loan term, to withdraw from the circulation as many bank notes in silver, as the state was giving for its payoff."[16]

The relation between the state and the National Bank

Thereby it had approved the loan to the state, the National Bank had increased the circulation of bank notes in silver for 10 million dinars. In order to provide the metal backing for issuing new bank notes, the bank had primarily to withdraw from the circulation 4 million dinars in silver notes and to buy silver coins for them. In that way was ensured the backing for issue of 2,5 times more bank notes in silver, i.e. 10 million dinars of loan. With withdrawal of these 4 million dinars bank notes in silver from the circulation, there was decreased the sum of money by which the bank could support trade and handicrafts, so there came to export trade endanger. The state soon realized its mistake; therefore the maximum circulation of silver bank notes was increased to 30 million dinars, on July 23rd 1898. Austro-Hungarian borders were opened again in 1897, so the export collapse was prevented, and was provided prosperity of Serbian trade at the end of 19th Century. Including the loan in 1898, the state

16 Gnjatović, D. (1991): *Stari državni dugovi*, Yugoslav review, Belgrade, p. 82.

debt at the National Bank had raised to 15,9 million dinars[17]. There was determined by the Loan Decree that the National Bank, every year, till the end of loan term, withdraw from the circulation so many bank notes amount as it gets from the state for its payoff[18].

Scarcity of money had occur in August 1900, which had affected that the government raises the loan at the National Bank in amount of 2 million dinars of bank notes in silver, under the same conditions as on raising the loan in 1898. The bank's possibilities were not great, while the loan represented a new impact on its crediting, so the next day, after passing the Loan Law, the bank had to suspend bills (of exchange) discounting and allowing the pledged loans.

"This embarrassing relation between the state and the Privileged National Bank was discontinued in March 1908. With the Law on Privilege Prolongation for the National Bank was determined that the state can indebt at its issuing institution only in two ways: first, by discounting its coupons up to the most 10 million dinars, with payment term of three months and rate of interest of 2% to the sum of 5 million dinars maximum, and over that sum with the rate of interest of 1,5%; second, by temporary exchange of state cash (gold and silver)for equal amount of adequate bank notes, with no remuneration to the bank. The Serbian state had, yet before the compulsory loans in 1898 and 1900, indebted at the Privileged National Bank, but in other ways and in much lower amounts. The state debiting at its issuing institution by the certificates of deposit, loans on state debenture stocks pledge and by the bank share in constant state loans in the period 1884-1887 had attained up to 8,7 million dinars, i.e. the state could never withdraw more than one fourth of bank notes in silver from free monetary circulation. Increasing the state debt to 15,9 million dinars in 1898, in free circulation had left less than a half of totally allowed free quota of bank notes in silver."[19]

There should emphasize that, by the law, was imposed the obligation that bank notes once put into circulation must be withdrawn in proportion with the state debt payment, which had disturbed the credit activity of the National Bank. Since the state had regularly paid its debt to the National Bank, the bank had regularly to withdraw the bank notes in silver from the circulation. All previously mentioned has influenced on crediting in autumn season. In that way appeared disproportion between credit possibilities of the National Bank and need for

17 Annual reports of the Privileged National Bank (1898), for all years from 1890 to 1895, The State Mint of the Kingdom of Serbia, Belgrade

18 The Privileged National Bank was increased silver notes circulation for 10 million, by giving the loan. In order to provide backing for issue of 2,5 times more notes in silver, i.e. 10 million dinars of loan, the bank had to withdraw four million dinars of silver notes from the free circulation and to buy silver coins for them. By withdrawal of this note amount was decreased a sum of money, by which the bank could support development of handicrafts and trade for almost one-fifth. There threatened a danger of export trade collapse in autumn season. The state immediately realized a mistake, and on July 23rd 1898 was increased the maximum of silver notes circulation to 30 million dinars, excluding the state loan of 10 million dinars. (Annual reports of the Privileged National Bank (1898) for all years from 1890 to 1895, The State Mint of the Kingdom of Serbia, Belgrade)

19 Gnjatović, D. (1991): *Stari državni dugovi*, Yugoslav review, Belgrade, p. 83.

internal money circulation. As stated before, at the end of the 19th Century, the monetary situation in Serbia was such that in circulation could not hold out gold bank notes, while the silver notes were not enough, which by the state had wanted to solve the agio problem. The currency issue was not solved, but left for some other time. "Formerly was thought that currency circumstances in the country could be regulated by legislative and purely formal way. However, both science and practice have proved that the currency issues are a product of economic and fiscal condition the country is in, and that they, by their selves solve, not by the laws but by the economic prosperity in the country. If the country is not indebted too much, if it is active in international balance, and if state finances are in good condition, then it is easy to solve the currency issues, but if the state budget constantly balance with deficit and if is indebted more than is profiting, then the currency will disrupt and could not be regulated. There should work on removing the causes which provoke and keep the currency derangement, therefore itself will bring into balance."[20]

Organizing the state finances

Definitely settlement of the state finances has started with the loans at the end of the 19th and the 20th Century. The state's credit at the National Bank at the end of the 19th Century could only in short-term to alleviate a lack of financial resources of the main treasury. The Serbian state has, yet by concluding the loan with Bontu (1881), i.e. by the Lottery Loan had tried to solve the problem of budget deficits and temporary debts. However, at the end of the 19th Century, the debts had achieved the amount of 40 million dinars, so they could settle only by foreign loan. It was clear that the loan could get by extremely unfavourable terms, while the credit of the Serbian state was badly positioned at the European stock markets, and the course of government papers had not risen over 64%.

Radical-progressive government has taken over the power in 1901, when the radicals had dominating influence. The goal of the radical program was the country's economic emancipation and organization of the state finances. The king Aleksandar Obrenovic was turned to the Russian foreign policy in 1900, so there came to the course increase of the Serbian government papers (up to 72%). This was an outstanding opportunity to place the rest of debenture stocks of four-percentage Conversion Loan. The rest of this loan was realized till the end of May 1902. The loan was concluded with many banks, in amount of 60 million nominal dinars. The issuing course of the loan was 80%, term of payment 50 years, and rate of interest 5%.The bank were obliged to deliver the first half of the loan's effective sum to the Serbian government in June and the second half in December 1903. The guarantee for regular payoff was all income surpluses, managed by the Independent Monopoly Administration, and super-guarantee was all surpluses of rail incomes. It was determined that the Independent Monopoly Administration be authorized for the loan services, so the loan was named the Monopoly one. "Till the end of 1903, by the Monopoly loan were definitely paid all temporary debts. In that way, as things turned out, a dynasty Karadjordjevic had come to power when finally had been solved the problem that had

20 Written monument of the Privileged National Bank of the Kingdom of Serbia 1884-1908, p. 100.

damaged the reputation of Obrenovic's reign for more than 20 years."[21] "The new loan was Petrovic's loan in 1902, which had completely liberated us from the floating debt. The loan, concluded under the reign of the King Aleksandar, was not completely realized till the reign of the King Peter: payoff of the floating debt was considered an initial step of the new regime in organizing our finances; in fact, it was a final step of the old regime, which had working on finances organization for years."[22]

The radical-progressive government was made in 1902 several important moves: it had realized the rest of debenture stocks of the four-percentage Conversion Loan, had concluded the foreign loan by which had been definitely paid off the temporary debts and had passed the Budget Law, by which had been forbidden to entry into the income account any unreal items (for example: deposited credits, expected tax collection etc.). The law had strictly forbidden costs exceeding in regard to planned expenses, therefore the government had taken care of legal situation during the budget conclusion for 1902. Also should be mentioned a merit of PhD Lazo Pacua, the minister of finances of that time. That is to say, in every former budget laws was planned a balance or surplus, and every year had ended with deficit. The year 1903 was the last that ended with deficit, starting from liberation war from Turks in the period 1876-1878.

Two reasons had, first of all, influenced on income increase of the Serbian state in the beginning of the 20th Century: first, regular collection of direct taxes and surtaxes; second, improvement of material position of Serbian people, whereat had increased the creditors' tax possibilities. "Undisturbed discount operations of the Privileged National bank had quite helped undisturbed development of export trade and increase of the population material welfare. During the realization of the Monopoly Loan[23], the government had paid off also a part of its debts to the National Bank after different loans, excluding the state (national) loans in 1898 and 1900. Thanks to it, the Privileged National Bank made available 2,7 million dinars of bank notes in silver, which had been connected to the state loans until then. The National Bank had put into the circulation these bank notes, i.e. put them available for trade, so it had not been forced to suspend the silver bank notes discount in autumn season. Thanks to the export increase and the realization of the Monopoly Loan, since 1903, in Serbia had found a large amount of gold, which had not immediately left the country. With this had revived also the circulation of bank notes in gold, while the agio had started to decrease rapidly. In regard that the government had regularly paid off the loan

21 Gnjatović, D. (1991): *Stari državni dugovi*, Yugoslav review, Belgrade, p. 87.

22 Jovanović, S. (1931): *Vlada Aleksandra Obrenovića*, book II, Geca Kon, Belgrade, p. 248-249.

23 The loan was negotiated with many banks, in amount of 60 million nominal dinars. Issue price of the loan was 80%, payment term 50 years, and interest rate 5%. As a guarantee for regular loan pay off made use all income surpluses, managed by the Independent Monopoly Administration, and as a super-guarantee made use the surpluses of rail incomes. The Independent Monopoly Administration was determined to do the loan service. Therefore the loan was named the Monopoly (M. Nedeljković (1909): „Istorija srpskih državnih dugova", Printing firm „Štampa" Stevo M. Ivković, Belgrade, p. 235.; *Budžet državnih prihoda i rashoda za 1904. godinu* (1904) The State Mint of the Kingdom of Serbia, Belgrade, p. 76.)

from 1898 and 1900 to its issuing institution, the state debt to the Privileged National Bank, with over 15 million dinars in 1901, had been reduced to 3,4 million dinars in 1905."[24]

Table 1. National (state) debt at the Privileged National Bank of the Kingdom of Serbia 1884-1914 (in dinars)

Year	Debt	Year	Debt	Year	Debt	Year	Debt
1884	304.216	1900	15.857.418	1892	8.699.034	1908	3.020.861
1885	1.538.485	1901	15.085.261	1893	5.738.802	1909	11.307.626
1886	2.918.944	1902	12.835.603	1894	5.828.713	1910	-
1887	3.512.944	1903	8.528.908	1895	5.803.833	1911	-
1888	4.064.000	1904	7.517.235	1896	5.750.056	1912	5.000.916
1889	2.873.850	1905	3.430.656	1897	7.331.820	1913	34.649.915
1890	6.958.328	1906	-	1898	15.943.576	1914	170.276.900
1891	7.916.378	1907	-	1899	15.152.278		

Source: Annual reports of the Privileged National Bank of the Kingdom of Serbia for period 1884-1913. Annual reports of the National Bank of the Kingdom of SCS for the year 1920.

In the beginning of the 20th Century, the organization of Serbian finances had positively affected the credit solvency of Serbia, so the government could raise a foreign loan, which would be used for the economy reformation. Thus, the final organization of the finances had included also further construction of the railway and termination of army reorganization. The radical government had come to power in 1903 and immediately had encountered serious difficulties regarding the new loan realization. At the same time was looking for a new loan and was negotiating with Austro-Hungary about new trade agreement. A north monarchy was trying to stipulate their trade agreement conclusion with a new loan conclusion. The radical cabinet under the leadership of Sava Grujic could not separate these two issues, so, in 1905, it renounced it to the cabinet of Nikola Pasic. „The new government had tried to impose an equality character of both negotiators during the negotiations on the new trade agreement, following internationally-legal principles of legal equality among the states. Although, Austro-Hungary was trying to keep up to those relations set by the negotiations in 1881 and 1892, which had brought the Serbian economy to subordinate position. The negotiations on the new loan were conducting with the union of several French, Austro-Hungarian and German banks, under the leadership of the Union Bank from Vienna. According to a primary proposal of the loan for the military armaments and construction of the new railways, submitted to the Parliament in 1904, the Serbian Government should oblige to spend the loan in those countries the loan had been issued in. The creditors wanted to impose Serbia an unfavourable agreement by connecting the acquisitions with the loan, similar to Bontu's Agreement in 1881 when the first railways had been constructed."[25] That correlation between the loan and the industrial acquisitions reminded on old times of the General Union, when creditor, at the same time, in the same agreement, was both supplier and contractor, dictating all conditions and pilfering great profit. Austro-Hungary wanted to protect its self from the French arms

24 Gnjatović, D. (1991): *Stari državni dugovi*, Yugoslav review, Belgrade, p. 88.

25 Ibidem, p. 89.

producers by binding the acquisitions for the country the loan was issued in. That is to say, by purchasing cannons in France, Serbia would prove that it no longer depend, in economic and political sense, from the north monarchy. The primary proposal on loan was not accepted by the Assembly. The other, partially altered proposal on loan, had the same fate, more criticized due to political than economic reasons. In the creditor's union, an important part played the Union Bank, for which was believed it was subsidized by the Austrian Government. "Since the first proposal denial, to the submission to the Parliament of that loan proposal for military armaments and construction of the new railways that soon will be passed by the Parliament on December 1906, in economic life of Serbia had been happened changes that are going to completely change the country's position in the world economy."[26]

Conclusion

The first debts of the modern Serbia have appeared at the end of the XIX and in the beginning of the XX Century, and had comprised the period of around 30 years, since the war for liberation and independence till the period of the Serbian state prosperity, in the beginning of the XX Century. Prior to it, Serbia, as a vassal Turkish province, had neither high state expenses, for administration, nor high military expenditures, because it had not entered wars. In the state existed a primitive national economy, with no social division of labour, therefore the state life was modest, and state funding was carried out simple and easy.

There are three main reasons, which led to debt occurrence in Serbia in observed period. The first and the most significant cause which led Serbia into debt was the war for liberation and independence. The second reason for debiting was the obligation of Serbia, after getting its political independence, to build a railway (according to Berlin Agreement and Berlin Convention). The third reason for Serbian debiting was the fact that Serbia, as independent country, entering the international community, had to rearrange fast into European organized country, so its governmental-legal organization for relatively short time, got significant ratio, which was also the case with militarism. All three causes had functioned in same direction and in favour of financial revolution in Serbia of that time. That all had reflected in hasty growth of budget expenditures and phenomenon of the public debt.

The emergence of the public debt was, from the beginning, bounded to the National Bank, i.e. its initial forms. And later on, during its functioning and period of finances stabilization, the National Bank was a carrier of all activities regarding the monetary system of the Independent State of Serbia.

26 Ibidem, p. 90.

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ULOGA NARODNE BANKE U STVARANJU JAVNOG DUGA NEZAVISNE DRŽAVE SRBIJE

Snežana Krstić[27], Slavko Vukša[28], Slobodan Andžić[29]

Sažetak

Period koji karakteriše pojava javnog duga u savremenoj Srbiji je vezan za kraj za XIX i početak XX veka, gde je borba za nezavisnost uslovila porast spoljnog duga Srbije. Smatra se da je zaduživanje države kod Narodne banke[30] staro koliko i ustanova Narodne banke. Naime, još pre otvaranja samih šaltera Narodne banke Srbije napravljen je državni dug odobravanjem pozajmice od 304.216 dinara u zlatu, na podlozi državnih bonova. Time je učinjena prva poslovna transakcija Banke, koja je izvršena pre početka redovnog poslovanja.

Ključne reči: *zajam, javni dug, Narodna banka*

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30 „Narodna banka ne treba da bude izvor za pojačanje državnih prihoda. Ona može postati takav izvor samo posrednim putem: blagotvornim uticajem na pravilan razvoj i deobu kredita koji će od svoje strane oploditi i podići zemaljsku radinost i trgovinu, te na taj način ojačati one prvobitne izvore iz kojih državna blagajna dolazi do svojih prihoda.“ (Iz govora dr Laze Pačua, ministra finansija u skupštinskom pretresu Zakona o Narodnoj banci od 1904 godine, *Spomenica Narodne banke* 1884-1934, str. 38)

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THREATS TO FOOD SECURITY AND COMMON AGRICULTURAL POLICY

Mariola Kwasek[1]

Summary

The aim of this article is presented threats to food security in the context of the CAP after 2013. The main threats to food security are (1) world population growth, (2) the increase demand for food, (3) food price, (4) the disappearance of the variety of agricultural plant species (4) the increase in the area of scarcity water and the limitation of the availability of land and (5) the food losses and food waste. In the face of numerous threats to food security, the European Union needs a strong Common Agricultural Policy, which could succeed in feeding the constantly-growing population of a world. The reformed Common Agricultural Policy should provide food security, not only for the European Union, but on a global scale.

Key words: *food security, food safety, threats, Common Agricultural Policy.*

JEL: *Q56, Q18*

Introduction

For centuries food security was interpreted as the possibility of providing food produced in a given country in full or in the majority to satisfy the demands of all inhabitants. This meaning of food security has changed, along with development of trade and international specialty. The rapid growth in worldwide food production and free international trade has enabled the countries with disadvantageous conditions to purchase the necessary food from other markets. Access to food depended on incomes, and not national production. Financial security prevailed over food security. This perspective was influenced by economists who wanted to treat food and agrarian products just like other goods, and make the volume and structure of domestic food production subordinate to market regulations and the comparative costs rule. Only the global crisis in 2007/2008 renewed the debate on food security from the household, national, regional (e.g. European Union) and global perspectives.

Food security may be achieved only with the simultaneous provision of economic and social security, as well as maintenance of domestic production at a level ensuring food accessibility and foreign trade or food reserves and the correct functioning of processing and distribution. Food security results mainly from systemic and institutional solutions in

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the fields of politics, economy and society.

The European Union, as the largest economy in the world, can play an important role in ensuring global food security in a world of limited resources. Currently, the debate over the future shape of the Common Agricultural Policy after the year 2013 is running. The issue of food security is one of many topics in this debate.

Food security

Food security is of fundamental importance for human existence. Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life[2].

Food security is ensured when the following three conditions are simultaneously satisfied:

- § Physical food availability – it means that the national food economy ensures meeting of at least the minimum physiological demand, and imports provide foods in excess of this minimum demand; the physical availability of food is linked with the need to maintain food reserves.
- § Economical food availability – it means that the economically weakest households have access to essential food (due to different types of food aid); a consumer has to have the purchasing power facilitating the purchase of the essential goods and services on the market; the purchasing power of a consumer on the food market depends on: income and food prices as well as the prices of other goods and services.
- § The health value of a single food product (food products free of any substances harmful to health, e.g. residues of pesticides, antibiotics, dioxins, and harmful colorants, as well as poisonous substances and pathogenic microorganisms) and consumer food rations (balanced food rations, e.g. the necessary energy level and the adequate proportions of nutritive components dependent on age, sex and type of work)[3].

Food safety is an integral part of food security. For the consumer, food safety is the most important feature of food quality; therefore food law regulates this issue in detail providing the consumer with the certainty that the purchased food is compliant with his safety requirements.

2 FAO (2009). *The State of Food Insecurity in the World 2009. Economic crises – impacts and lesson learned.* Rome.

3 J. Małysz (2008): *Bezpieczeństwo żywnościowe strategiczną potrzebą ludzkości,* ALMAMER, Warszawa.

Codex Alimentarius[4] plays an important role in measures ensuring the food safety and define it as *the guarantee that food shall not bring any harm to the consumer's health if it is prepared and/or consumed according to the identified purpose.*

Food affairs that have taken place at the turn of the 20-21st century, and in recent years (e.g. mad cow disease, foot-and-mouth disease, glycol in wines, dioxins in fodder and food, melamine in milk, contamination of cucumbers with mutated *E.coli* bacteria– EHEC, industrial salt used in food production) have alerted the European consumer with regards to all aspects of food quality and safety.

Raised awareness of health threats and food safety among European consumers meant that satisfying constantly-increasing expectations in this field should be one of the most important challenges faced by the agrarian production and food industry.

In the European Union, supervision and control over food safety is performed by *the Food and Veterinary Office* being a part of Directorate-General for Health and Consumers (DG SANCO). There are different supervision systems of food quality and safety in individual Member States of the European Union.

Threats to food security

The food system is bending under the intense pressure of the world population growth, increasing demand for food, in particular meat and meat products as well as milk and dairy products, scarcity water and land resources and the fight for arable land with the producers of bio-fuels, industry and urbanisation. Climate change, the vanishing of biodiversity of ecosystems and the diversity of agricultural cultivars, new plant and animal diseases, and increasing energy and food prices, the losses food and waste food, as well as speculation on the food market, will have a disadvantageous impact on global food security.

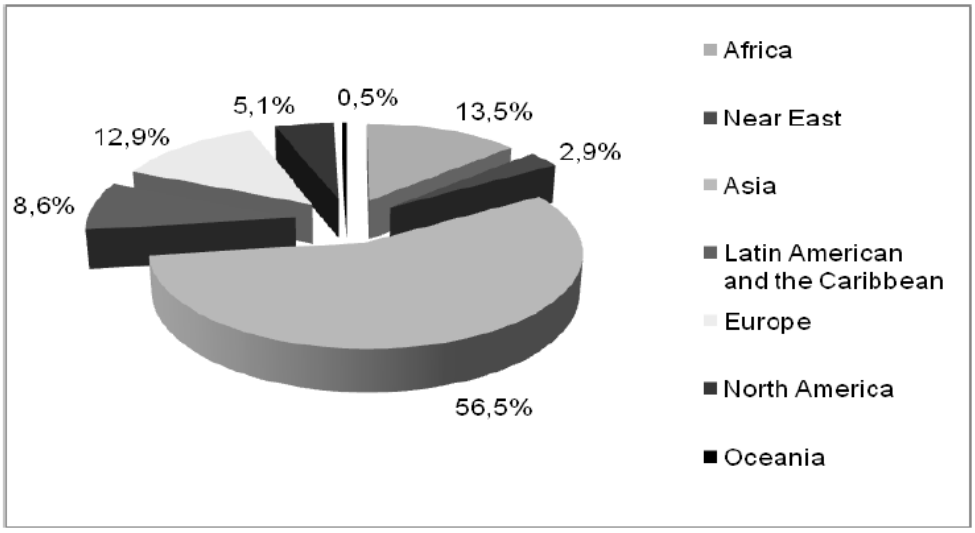
World population growth

In the last 50 years, i.e. in the years 1960-2010, the global population has increased from 3.0 to 6.8 bln people. On 11 October 2012 the world was inhabited by 7,000,976,253 people[5]. According to demographic forecasts, in 2025 the Earth will be inhabited by 7.4 bln people, and in 2050 – 9.1 bln people.

4 The Codex Alimentarius is the most important international organisation dealing with food safety, consumers' health and the ensuring of fair practices in food trading. It was founded in 1963 under the Common Programme for Food Standards established by Food and Agriculture Organisation of the United Nations – FAO, and World Health Organization – WHO.

5 www.census.gov/main/www/popclock.html

Graph 1. Distribution of the world population in 2010 (in %)



Source: International Population Reports WP/02. Global Population Profile: 2002 (2004), U.S. Government Printing Office, Washington, DC.

In 2025, the number of inhabitants of Asia will reach 4.4 bln (nearly 1.5 bln in China, and 1.4 bln in India), and 1.3 bln in Africa, including over a billion in Sub-Saharan Africa. The population of Europe will increase to 814 mln, Latin America and Caribbean up to 690 mln, North America to 388 mln, the Middle East to 280 mln, North Africa up to 211 mln, and Oceania to 40 mln[6].

The rapid growth of the world's population resulting mainly from the high birth rate in the developing countries, mostly African as well as in some countries of Asia and South America, means that feeding the population is one of the most important issues in the modern world. There are serious disproportions in the level of nutrition of the world's inhabitants resulting from the uneven distribution of food production (the largest areas of food demand are not the same as the largest areas of food production) and inadequate distribution of food, as well as improper political and institutional solutions. It should be emphasized that climate change causing droughts, floods and other disasters will have a disadvantageous impact on global food production ability[7].

The increase demand for food

Forecast increase in the world's population to over 9 billion in 2050 will result in the further growth in food demand. At present, global food production guarantees the consumption of

6 *International Population Reports WP/02. Global Population Profile: 2002* (2004), U.S. Government Printing Office, Washington, DC.

7 According to the FAO, 370 million people will be threatened with hunger at the beginning of 2150's if new land is not immediately implanted with agricultural crops.

2796 kcal daily by each inhabitant of the Earth. However due to unequal access to food, 25% of the world's population is undernourished, and 10% is starving.

The level of food consumption is strongly related to external environment (the economy). The higher the level of economic development, the higher the level of food consumption. Global economic growth results in: increased wealth of the global population, higher demand of food, and changes in consumption patterns dominated by the consumption of animal products, especially meat and meat products.

Table 1. Food consumption in China in 1983-2009 – in kg per capita/ year

Item	1983	1993	2003	2009	
					1983=100
cereals	207,9	202,7	158,0	151,4	72,8
rice	95,6	93,2	78,5	76,3	79,8
wheat	73,2	82,4	61,4	66,4	90,7
maize	24,3	20,2	15,3	6,8	28,0
starchy roots	83,9	61,7	74,5	65,2	77,7
vegetables	66,2	128,0	270,5	321,5	485,6
fruits	9,4	24,2	49,7	72,3	769,1
sugar (raw equivalent)	5,7	5,3	7,6	5,9	103,5
meat	16,2	33,5	54,8	58,2	359,3
bovine meat	0,4	1,9	4,9	4,8	1200,0
pig meat	13,3	24,6	35,3	36,7	275,9
poultry meat	1,9	5,5	10,9	12,6	663,2
mutton & goat meat	0,5	1,2	2,8	2,9	580,0
fish, seafood	5,8	15,4	25,4	31,0	534,5
milk – excluding butter	3,8	6,6	16,6	29,8	784,2
eggs	3,0	9,2	18,3	18,5	616,7
fats	4,9	7,6	13,7	11,1	226,5
animal	0,9	1,6	2,4	2,2	244,4
vegetables oils	4,0	6,0	11,3	8,9	222,5

Source: FAOSTAT.

The exact functioning of this mechanism is illustrated by an example the Chinese getting rich. In 1983-2009, an increase in the consumption of the majority of food products was observed in China (tab. 1). The consumption of vegetables was the highest (nearly 5 times higher – up to the level of 321,5 kg per capita/year), and fruit (over 7 times higher – up to the level of 72,3 kg per capita/year). In the group of animal products, the highest consumption was related to meat (3.6 higher – up to 58,2 kg per capita/year), fish and seafood (over 5,3 times more – up to the level 31 kg) and milk and diary products (over 7.8 times higher – up to the level 29,8 kg.

The growth of wealth in developing countries will result in increase demand for food, including animal products. The higher demand for animal products is particularly disturbing, because for every ton produced of meat falls to 20 tons of fodder, based mainly on cereals meat. If global meat consumption is not reduced in the next several decades, we shall be faced

with a global food crisis threatening food security[8]. The World Bank forecasts that global demand for food will rise by 50% and for meat by 85%, by 2030[9].

Food prices

Global food crisis that began with the sudden increase in food prices all over the world at turn of 2007/ 2008 resulted in an increase in the costs of food product imports (especially in developing countries dependent on import), and had catastrophic effects on the household budgets. The increase in prices is being felt the most by the millions of the poorest people. It is estimated that global food prices can increase by 70-90% by the year 2030, and that's without calculating the impact of climate change, which could cause prices to double[10].

The food crisis played its part in the increase in the number of undernourished people all over the world. In 2009, the number of undernourished people exceeded 1 billion[11]. Why is it then that in a world where enough food is produced to feed all its inhabitants, one person out of 7 suffers hunger? Such a large number of undernourished people are blighting the hope of reaching the first of the Millennium Development Goals – *eliminating extreme poverty and hunger*.

Table 2. Number of people undernourished in the world (1990-1992 to 2010-2012)

Item	Number of people undernourished (millions)				Proportion of undernourished in total population (%)			
	1990-1992	2004-2006	2007-2009	2010-2012*	1990-1992	2004-2006	2007-2009	2010-2012*
World	1000	898	867	868	18,6	13,8	12,9	12,5
Developed countries	20	13	15	16	1,9	1,2	1,3	1,4
Developing countries	980	885	852	852	23,2	16,8	15,5	14,9
Asia	739	620	581	563	23,7	16,3	14,8	13,9
Southern Asia	327	323	311	304	26,8	20,4	18,8	17,6
Western Asia	8	16	18	21	6,6	8,8	9,4	10,1
Africa	175	210	220	239	27,3	23,1	22,6	22,9

8 U. Świerczyńska (2008): *Przyczyny światowego kryzysu żywnościowego oraz jego wpływ na najbiedniejsze kraje świata* [w:] *Globalne ocieplenie i kryzys żywnościowy*. Fundacja Polskie Centrum Pomocy Międzynarodowej, Warszawa.

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10 *Growing a Better Future, Food justice in a resource – constrained world* (2011), Oxfam International.

11 FAO (2010): *The State of Food Insecurity in the World 2010, Addressing food insecurity in protracted crises,* Rome.

Item	Number of people undernourished (millions)				Proportion of undernourished in total population (%)			
	1990-1992	2004-2006	2007-2009	2010-2012*	1990-1992	2004-2006	2007-2009	2010-2012*
Sub-Saharan Africa	170	205	216	234	32,8	27,2	26,5	26,8
Northern Africa	5	5	4	4	3,8	3,1	2,7	2,7
Latin America and Caribbean	65	54	50	49	14,6	9,7	8,7	8,3
Oceania	1	1	1	1	13,6	13,7	11,9	12,1

Source: FAO (2012): *The State of Food Insecurity in the World. Economic growth is necessary but not sufficient to accelerate reduction of hunger and malnutrition.* Rome.

* projections

On one hand, there is the growing number of undernourished people, while on the other, the obese, whose number is estimated at around a billion. The worldwide problem of obesity is connected not only with changes in lifestyle (sedentary way of living, improper dietary habits, low physical activity, stress), but also with the increase in food prices and its correlation to nutritive value of food and production costs[12].

The disappearance of the variety of agricultural plant species

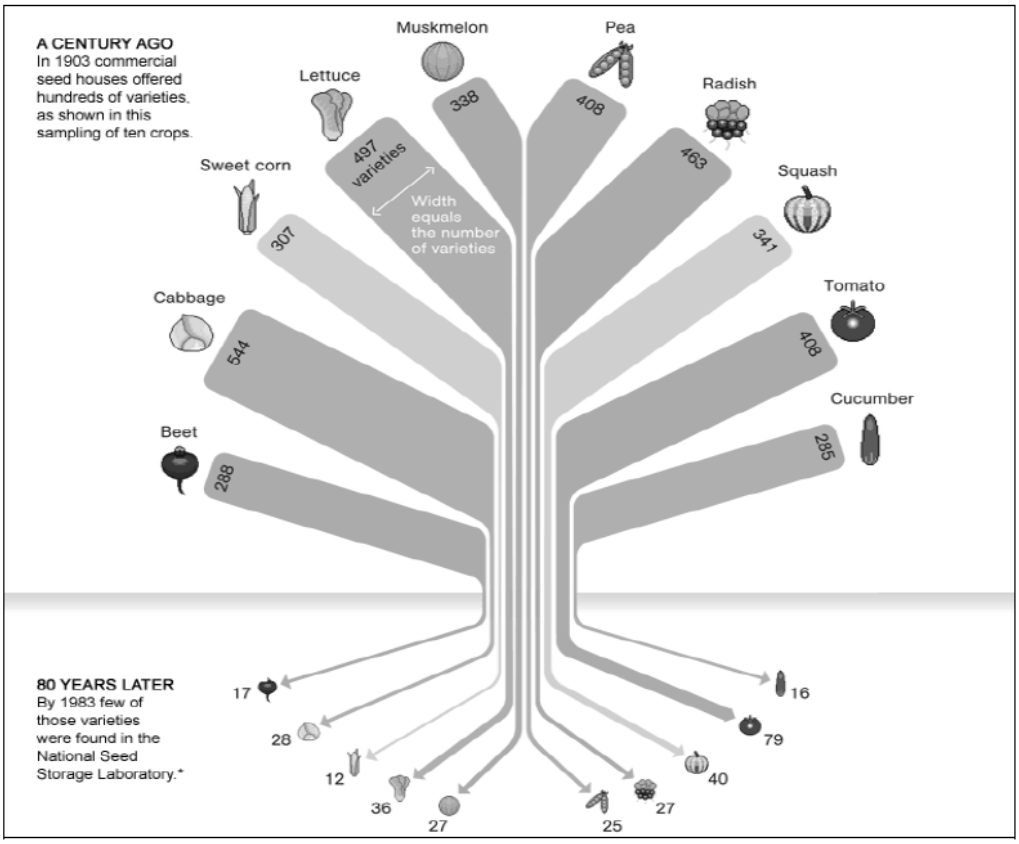
Biodiversity in agriculture includes, in addition to natural habitats and wild species of plants and animals, including genetic resources for agriculture, which consists of local crop varieties and livestock breeds.

Diversification of agriculture is the only and most important method of achieving food security in a changing climate. The greater number of species and varieties in one field or in a single ecosystem, the greater the likelihood that some of them can cope with changes in the environment. The diversity of species also decreases the probability of occurrence of diseases and pests, reducing the number of organisms-hosts on which they could develop[13].

12 A. Drewnowski (2010): *The cost of US foods as related to their nutritive value,* Journal of Clinical Nutrition, 92(5).

13 J. Cotter, R. Tirado (2008): *Food Security and Climate Change: The answer is biodiversity,* Greenpeace, United Kingdom.

Figure 1. The declining diversity of agriculture varieties



Source: Giovannucci D., Scherr S., Nierenberg D., Hebebrand Ch., Shapiro J., Milder J., Wheeler K. (2012): *Food and Agriculture: the future of sustainability, A strategic input to the Sustainable Development in the 21st Century (SD21) project,* New York.

The increase in the area of scarcity water and the limitation of the availability of land

Water is one of the most important factors deciding the fate of a human being. Water resources all over the world are estimated to be at around 1 387 mln km^3. Salt water constitutes 97% of water resources all over the world, while fresh water constitutes only 3%. 69% of fresh water is stored in glaciers and icecaps, while 30% is stored underground (ground water). This means that the available drinking water constitutes only 1% of global water resources.

Water resources are decreasing in many countries due to climate changes. The amount of water allotted to 1 person is 0.23 km^3. According to the World Water Development Report, during the next 20 years, the average amount of water allotted to 1 person will decrease by 1/3.

The demand for water is growing at an alarming rate due to the larger number of people in the world. The increase in the demand for water is also a result of changes in consumption patterns, as well as increases in energy production, especially biofuels. The most water is used by the inhabitants of Asia, where the population is growing at the quickest rate. For example, a Chinese inhabitant in 1961 consumed only 4 kg of meat and meat products per capita/year, in 1983 – 16 kg, while in 2009 as much as 58 kg. It is important to note that the production of 1 kg of beef requires 15 500 litres of water, 1 kg of poultry – 3 900 litres, 1 kg of eggs – 3 300 litres, and 1 kg of wheat – 1 300 litres[14].

According to the FAO, the main factor limiting the increase in the production of food all over the world is water. Agriculture utilises 70% of global resources of fresh water, and climate changes further aggravate this problem.

A significant increase in demand for food must be met based on the diminishing resources will not only water but also land. Due to the of soil erosion, depletion of nutrients, infrastructure development and urbanization of agricultural land area is decreasing. With so much population growth projected to 2050 will need it to feed on smaller and smaller area of agricultural land.

The projected level of agricultural land in 2030 will amount to less than 0.22 ha/person (now an inhabitant of 0.27 ha). The increase in agricultural production must therefore result from improvements in productivity.

The food losses and food waste

Food losses and waste of food are two different issues. Food losses occur primarily in the low-income countries as a result of the lack of adequate infrastructure. Food losses occur mainly at the production stage, and looses at the stage of consumption are much smaller. Production and inadequate storage generates approximately 40% losses of food.

Roughly one-third of the edible parts of food produced for human consumption gets lost or wasted globally, which is about 1.3 billion ton per year. Per capita food wasted by consumers in Europe and North-America is 95-115 kg/year, while in Sub-Saharan Africa and South and South-East Asia is only 6-11 kg/year[15].

In connection with such a huge waste of food you should take any steps to reduce it. A good solution is to campaigns, which may contribute to changes in consumer behaviour. One of them, under the slogan "Do not waste food. Think organic", was conducted by the Federation of Polish Food Banks in 2012. Limitation of food waste will increase the efficiency of land use, improved water management, the assurance of benefits for the whole sector of the agriculture in the world on a global scale, and to reduce undernourished in developing countries.

14 *Growing a Better Future. Food justice in a resource – constrained world* (2011): Oxfam International.

15 FAO (2011): *Global Food Losses and Food Waste,* Rome.

The Common Food Policy after 2013 and food security issues

The Common Food Policy is one of the key policies of the European Union, which is constantly evolving. Just fifty years ago its main goal was the guarantee of the necessary amount of food for the European inhabitants struggling with the post-war food shortage. That goal was achieved. However, its side-effect was the overproduction of food.

In the nineties of XX century, one of the most important aims of the Common Agricultural Policy was the elimination of the production surplus and the increase in the quality of agricultural and food products, as well as environmental protection. The causes of the divergence from intensive agriculture to the multi-functional development of the rural areas were, among others, (1) the overproduction of food, (2) the degradation of the natural environment caused by chemisation and mechanisation of agriculture, (3) the depopulation of rural areas, and (4) the crisis caused by mad-cow disease. The counteraction against those trends was included in the Maastricht Treaty of 1992, in which the European Union adopted regulations promoting the production of high-quality food rooted in the environment and tradition.

Currently, the main aim of the Common Agricultural Policy is not only providing enough food, but also the high-quality food produced in a sustainable manner and in accordance with the requirements in the fields of environmental protection, water resources, the health and well-being of animals, the health of plants and public health, all of which simultaneously guarantee stable agricultural incomes.

The Common Agricultural Policy, with a perspective reaching the year 2020, will be directed towards raising the competitiveness of European agriculture and the guarantee of food security, simultaneously promoting high-quality food products, environmental protection and the development of rural areas.

Food security is becoming a more prominently raised topic during the discussion on the future of the CAP. This is shown by the Resolution of the European Parliament of 18 January 2011 on recognising agriculture as a strategic sector in the context of food security[16]. The Resolution states that, among others:

- § The right to food security is a basic human right and the European Union has a duty to feed its inhabitants.
- § The guaranteeing an adequate supply of food is an essential component of food security.
- § Supports the formula Food Security – Nutrition – Quality – Proximity – Innovation – Productivity; believes that in order to achieve this the future CAP should take note of the public expectations that it should be both an agricultural and a food policy geared to providing public information about a healthy diet (for example, the realisation of nutrition programmes such as School Fruit and School Milk in the Member States).
- § The increased drive to develop renewable energy sources must take into account the

16 The Resolution of the European Parliament of 18 January 2011 on the recognition of agriculture as a strategic sector in the context of food security (2010/2112(INI)).

impact on food production and supply.

§ The productivity gains that will be made in the new Member States will increase the amount of land available land and will provide an opportunity to boost the production of proteins and oleaginous products in the EU.

§ The food from third countries which entering the EU must meet the same high standards, so that European producers do not suffer in terms of competitiveness.

In the face of numerous dangers to food security, the European Union needs a strong CAP, which could succeed in feeding the constantly-growing population of a world with limited water and land resources.

The reformed Common Agricultural Policy should provide food security, not only for the European Union, but on a global scale. The most important challenges for the Common Agricultural Policy are:

§ assurance of the continuity of agricultural production in the whole of the EU;

§ assurance of the coexistence of different agricultural models, including small-scale agriculture, which is suitable for the creation of jobs in the rural areas of the European Union, ecological agriculture and sustainable agriculture;

§ taking into account the expectations of the European consumers in the matter of quality and food security;

§ assurance of the clearance of the whole agriculture and food chain, so that consumers can have access to reliable information as to where the food they consume has been produced, what ingredients it contains and how it was produced,

§ creation of a new food-quality policy, which will have a significant impact on sustainable and competitive European agriculture;

§ support of agricultural producers who want to meet the challenges in the area of food quality through participation in food-quality systems, both at the European Union and national levels;

§ encouragement of farmers to convert to a management system in which support is not connected with the amount of food, but with its quality;

§ production, protection and promotion of high-quality food;

§ support of promotional and informative actions directed towards both food producers and consumers;

§ protection of the natural environment;

§ health care and decent conditions of animal husbandry;

§ organic food production;

§ promotion of healthy food consumption patterns, which would result in the improvement in the health of the inhabitants of the European Union;

§ to provide nutrition education and health, especially in children;

§ the reduce food waste.

Conclusion

In a situation where the global population is growing, as is the global demand for food, the European Union, as the largest economy and the biggest assistance provider in the world, may help satisfy that demand. Therefore it is crucial to maintain and improve the agricultural production capability of the EU and, at the same time, respect the obligations of the European Union arising from international trade agreements and policy coherence for development. A strong agricultural sector is necessary for a competitive food industry.

The agriculture of the European Union will not only have to provide more food, but also improve food quality in conditions of aggravating climate changes (droughts, floods), the decreased availability of water and land, the disappearance of biodiversity, new plant and animal diseases, increasing speculation on the markets of agricultural resources, the growing disproportions in the rate of the natural population growth on the global scale and the growing requirements of consumers in the area of food safety and food security.

The pursuit of higher quality constitutes an important element of the strategy of the agriculture and food sector of the EU on the global market, in order to maintain the high level of competitiveness. High-quality European food is the main principle of the agriculture of the European Union and plays a key role in the creation of the cultural identity of countries and regions.

The priority of the Common Agricultural Policy should be the improvement in the efficiency of agriculture in the EU, while simultaneously improving environmental standards. In this manner the European Union will guarantee the food self-sufficiency and increase its input into global food security.

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ECONOMIC FEATURES OF PROCESSED FRUIT PRODUCTION IN SERBIA

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Summary

There are various possibilities of fruit processing regarding assortments of both semi-processed and finished fruit products. Within a wide assortment of processed fruit products, there are semi-processed fruit products which can be directly marketed or used as raw materials in further stages of processing, thus causing different economic effects. This paper displays the indicators of economic effects (production value, production costs (especially direct costs), and the difference between production value and total production costs) in all stages of a certain type of fruit processing. The obtained results indicate that advanced stages of fruit processing entail an increase in costs, but these increased costs eventually enable higher revenues.

Fruit processing is cost-effective due to the fact that fruit processing value is higher than the market value of fruits. The fruit processing value in compote production is on average 48.87% higher than the fruit market value. In semi-processed fruit production (fruit puree and pitted crushed fruits Rotativa[2]*), the fruit processing value is on average 14.83% higher than the fruit market value.*

Key words: *processed fruit production, production value, production costs, financial results*

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2 Unlike fruit puree which is a homogenous fruit mass, pitted crushed fruits (*Rotativa*) contain parts of processed fruits.

Introduction

Nowadays, Serbia possesses considerable fruit processing and cooling capacities. However, during the last decade of its development, the fruit processing industry in Serbia has addressed the issue of facility underutilisation (Milić at al., 2002, 2005). This is a consequence of the discrepancy between primary fruit production, fruit processing industry and low fruit market value. Approximately 10% of the total fruit yield in Serbia is processed, which is rather low in comparison with the USA where approximately 45% of produced apples and 70% of produced plums are processed.

Processed fruit production can be a highly profitable industry provided it meets market demands. However, current industrial processing facilities should be better equipped, modernised and specialised in order to produce high-quality products which would meet the demands of very selective markets. In addition to production capacity and raw materials, product branding is also an important constituent of successful fruit product marketing. The analysis of product assortment has shown that the Serbian processed fruit production does not have a leading market product, as far as both quantity and quality are concerned, unlike Greece where peach compote dominates the market, as well as apricot products in Hungary, apple juice in Switzerland, tomato products in Italy, etc. (Niketić-Aleksić, 1987).

Research Aims, Data Resources and Work Methods

The principal aim of this research is a review of significant production and economic aspects of processed fruit production. The focus of the research is the quantification of economic effects obtainable in primary production and all stages of a certain type of fruit processing. The analysis of main economic production indicators was done in 2011. The obtained production and economic results in processed fruit production were analysed based on the accounting calculations of the production, business reports, and company's recipes for processed fruit production in the Province of Vojvodina. The following products were observed: fruit purees, pitted crushed fruits, industrial marmalade, jam, compote and fruit juices.

During advanced stages of the research, a method of fruit processing value was applied in order to determine cost-effectiveness of using fresh fruits in production. The assessment of raw materials according to processing value is based on economic gains which are obtained as results of their utilisation in production. This value indicates cost-effectiveness of fruit processing and demonstrates how raw materials purchased on the market gain money value during production.

The processing (yield) value of every agricultural product can be determined, and this value basically represents the economic valorisation of products in technological processing. The processing (yield) value is determined in the following manner:

$$Y = \frac{TV - UTP}{X}$$

where Y is the processing (yield) value of an agricultural product (fresh fruits), TV is the market value of obtained processed fruit products, UTP indicates the total processing costs reduced by raw material costs of input agricultural products (fresh fruits), and X is the amount of a used agricultural product in kilograms, which is valorised.

The fruit processing value is calculated on the basis of calculation data of processed fruit production. The quality of raw materials and market price of obtained products greatly affect the processing price.

Research Results

In addition to fresh fruit consumption, fruits can be semi-processed and used in further processing, or fully processed into finished products. Therefore, there are two groups of processed fruit products: semi-processed fruit products and finished fruit products. The group of semi-processed fruit products includes: fruit pulps, purees, fresh (raw) fruit juice, and pasteurised fruits. The group of finished fruit products includes: compotes, purees, jams, marmalades, jellies, candied fruits, fruit preserves, juices, concentrated fruit juices, fruit syrups, and dried fruits.

Although the assortment of processed fruit products (semi-processed and finished products) is very wide, the production of fruit juices and frozen fruits dominates industrial processing (Lukač Bulatović, 2010). Fruit juices and frozen fruits account for 71.95% of the total processed fruit production in Serbia.

Observed as a whole, the fruit processing in Serbia is badly organized and demonstrates significant weaknesses. First and foremost, processing facilities are oversized and lacking production specialisation, which negatively affects the marketing of high-quality and high-quantity processed fruit products. Approximately 10% of produced fruits and vegetables is processed in Serbia, which is rather low in comparison with developed countries where over 70% of the total fruit and vegetable production is processed.

The utilisation of fruit processing capacities in Serbia approximates to 79.2% in almond, hazelnut, and chestnut processing production, 69.7% in fruit concentrate production, 48.0% in fruit juice production, 34.9% in frozen fruit production, and 31.5% in marmalade production. The utilisation of capacities in other types of fruit processing production is under 17.1%.

One of the reasons of capacity underutilisation is low marketability of fruit products. Processed fruit products are still mostly produced by domestic resources as a consequence of consumer's low standard of living, high prices of processed fruit products, and unsatisfactory quality and assortment of products.

The fruit processing at the observed facility operates in two stages. The first processing stage, which occurs as a consequence of seasonal fruit yield, involves semi-processed fruit production. Fruits are processed into purees and pitted crushed fruits (*Rotativa*), which are later (out of season) further processed into finished products (jams, marmalades and fruit juices).

During 2011, the total processed fruit production at the observed facility amounted to 821,039 kg. Fruit puree with the annual production of 382,575 kg accounts for 46.60%, and occupies a leading position in the total amount of processed fruits (Table 1-3). The production volume of other processed fruit products ranges from 15,770 kg (industrial marmalade) to 167,247 kg (fruit juices).

Business results can be expressed by means of various indicators which measure and determine the economic effectiveness of production during a fiscal year (Andrić, 1998). The most important indicators of business results are: the value of production, production costs, and economic (financial) results.

The production value of analysed processed fruit products was calculated based on the attained production volume and unit selling price. The value of production is directly proportional to the volume of production and selling price. An increase in production volume and selling price causes an increase in production value, and vice versa. In the analysed year (2011), the value of processed fruit production amounted to 92.8 million RSD. The lowest production value was recorded in industrial marmalade production (2.6 million RSD), whereas the highest production value was recorded in compote production (24.5 million RSD).

Table 1. Key economic indicators of the semi-processed fruit production in 2011 (in RSD)

Indicators		**Semi-processed fruit products**		
		Industrial marmalade	Pitted crushed fruits (*Rotativa*)	Fruit puree
A.	Production value	2,641,475.00	4,108,863.00	31,184,558.00
I	Direct costs	1,744,803.69	2,710,796.35	20,560,035.76
1.	Material costs	1,492,856.92	2,145,390.97	17,816,992.14
1.1.	Raw materials	651,103.78	2,041,908.29	16,336,032.84
1.2.	Additives (sugar, citric acid)	667,755.43	/	/
1.3.	Package	12,307.74	24,370.92	201,819.79
1.4.	Energy (all forms)	161,689.97	79,111.76	1,279,139.51
2.	Gross personal income	93,394.06	319,071.60	875,499.93
3.	Depreciation	158,552.70	246,333.78	1,867,543.69
II	Overhead costs	668,238.09	1,038,201.26	7,870,971.80
III	Total costs	2,413,041.77	3,748,997.61	28,431,007.56
B.	Financial result - profit	228,433.22	359,865.39	2,753,550.44
	Attained production volume (kg)	15,770	49,185	382,575
	Selling price (RSD/kg)	167.50	83.54	81.51
	Total unit costs – RSD/kg	153.01	76.22	74.31
	Production efficiency	1.09	1.10	1.10
	Production profitability rate (%)	9.47	9.60	9.69
	Production performance Labour hour requirement – h/100 kg	2.21	2.65	0.88
	Machine hour requirement – h/100 kg	0.30	0.08	0.10

Source: The calculation was done by the author based on the data calculation of fruit processing

Within the total unit cost structure, the direct costs account for 72.31%, whereas the overhead costs account for 27.69%. The material costs occupy the largest share of direct costs (60.05% on average). The raw material costs occupy the largest share of material costs (37.01% on average). The average share of additive costs (sugar, citric acid) in the total cost structure amounts to 11.93%, followed by the package costs (6.87% on average), depreciation (6.57% on average), gross personal income (5.69% on average), and electricity and mazut (fuel oil) (4.25%).

Table 2. Key economic indicators of the finished fruit production in 2011 (in RSD)

Indicator		Finished fruit products		
		Compote	Jam	Fruit juice
A.	Production value	24,485,100.00	12,873,750.00	17,516,407.00
I	Direct costs	14,435,974.67	7,910,364.74	11,278,519.88
1.	Material costs	11,395,456.15	6,506,727.65	9,670,422.24
1.1.	Raw materials	4,977,027.36	2,418,894.47	5,632,241.08
1.2.	Additives (sugar, citric acid)	1,936,508.84	2,638,793.96	1,569,104.00
1.3.	Package	3,379,906.67	980,795.52	2,097,857.73
1.4.	Energy (all forms)	1,102,013.28	468,243.70	371,219.43
2.	Gross personal income	1,728,883.15	684,861.12	583,344.83
3.	Depreciation	1,311,635.37	718,775.97	1,024,752.81
II	Overhead costs	5,528,034.00	3,029,361.73	4,318,935.35
III	Total costs	19,964,008.67	10,939,726.47	15,597,455.23
B.	Financial result - profit	4,521,091.32	1,934,023.53	1,918,951.78
	Attained production volume(kg)	139,394	66,868	167,247
	Selling price (RSD/kg)	175.65	192.52	104.73
	Total unit costs – RSD/kg	143.22	163.60	93.26
	Production efficiency	1.23	1.18	1.12
	Production profitability rate (%)	22.65	17.68	12.30
	Production performance Labour hour requirement – h/100 kg	3.25	3.75	1.37
	Machine hour requirement –h/100 kg	0.06	0.28	0.04

Source: The calculation was done by the author based on the data calculation of fruit processing

The economic (financial) results were determined as a difference between the production value and total costs. Positive financial results (profit) were obtained in processed fruit production. In the analysed year, the highest profit (4.5 million RSD) was recorded in compote production. The lowest profit (228,433 RSD) was recorded in industrial marmalade production.

In this paper, the efficiency of production is expresses by a ratio based on the relation between the value of production and total costs. Another indicator of production efficiency is the cost price (Gogić, 2005). As long as the cost price of a product or service is lower than the market price, positive financial results (profit) are obtained.

The efficiency ratio of processed fruit production amounted to 1.14, i.e. for every 100 RSD of total costs 114 RSD of production value was obtained. According to the types of processed fruit products, the most efficient production was recorded

in compote production due to the highest efficiency ratio of 1.23. The production efficiency ratio can influence the selection of fruit products in processing provided there are favourable conditions such as a potential for marketing additional amounts of manufactured products.

Table 3. Key economic indicators of the semi-processed and finished fruit production in 2011 (in RSD)

Indicator		Semi-processed fruit products	Finished fruit products	Total
A.	Production value	37,934,896.00	54,875,257.00	92,810,153.00
B.	Total costs	34,593,046.95	46,501,190.37	81,094,237.32
C.	Financial result - profit	3,341,849.05	8,374,066.63	11,715,915.68
	Attained production volume (kg)	447,530	373,509	821,039
	Production efficiency	1.10	1.18	1.14
	Production profitability rate (%)	9.66	18.01	14.45

Source: The calculation was done by the author based on the data calculation of fruit processing

Profitability is a very important indicator of business performance, and a key factor in assessing financial success and further development of any enterprise. Moreover, profitability is an indicator of justification and utility of an industry. There are two types of profitability: the profitability of production and the profitability of production resources. Since accounting calculations do not express data on average resource utilisation, the profitability rate was used in this paper. The profitability rate can be calculated based on the relation between profit and total production costs (Elenov, 2002). Production is profitable only if positive financial results are obtained. Therefore, the profitability rate is often referred to as the rate of profit, and it is expressed as a percentage.

The positive profitability rate was recorded in processed fruit production in the analysed year. According to the types of processed fruit products, the positive profitability rate was 14.45% on average. The highest profitability rate was recorded in compote production (the profitability rate = 22.65%). In other types of processed fruit production, the profitability rate ranged from 9.47% in industrial marmalade production to 17.68% in jam production.

Production performance is expressed by means of quantity and value. The quantity of production performance in processed fruit production is measured by labour hours per unit of product. The highest production performance quantity of 0.0088 h/kg (113.64 kg/h) was recorded in fruit purees, and the lowest in jam production (0.0375 h/kg or 26.67 kg/h).

Processed fruit production enables more favourable production and economic results than the fresh fruit marketing (Rott, 1996). Advanced stages of processing cause an increase in costs, but these increased costs enable higher income and residual income. The economic effect of apple processing into clear apple juice and brandy indicates the increase in income of 26.9% and residual income of 1.7% in comparison with the effect of selling apples as consumable commodities on the domestic market (Lukač-Bulatović, 2006). An apricot semi-processed product, fruit pulp, indicates the increase in income of 28.21% and residual income of 3.63%.

Further processing of fruit pulp into finished fruit products, jam and marmalade, increases the income by 40.83%, and the residual income by 19.94% (Cindrić et al., 1981).

The processing value of basic raw materials indicates the highest potential price in purchasing raw materials on the market in order to meet the lowest margin of processing profitability (Radović, Furundžić, 1997, Gogić, 2005). If the market price of fruits would equal the processing price then business results of processing would amount to zero. Therefore, fruit processing would be on the lowest margin of economic justification because the profit from fruit processing would amount to zero. If the fruit market price is higher than the processing price, fruit processing shows negative financial results (loss), and vice versa; if the fruit market price is lower than the processing price, fruit processing shows positive financial results (profit).

The processing value of fruits is higher than the selling (market) value of fruits as raw materials, thus fruit processing is cost-effective (Table 4-7).

Table 4. Processing value of basic raw materials in the fruit puree production in 2011 (RSD/kg)

Elements	Semi-processed fruit products				
	Apple puree	Apricot puree	Peach puree	Sour Cherry puree	Plum puree
1. Selling price	41.50	101.00	69.00	126.50	58.00
2. Total costs (without basic raw material costs)	19.3800	38.0500	28.0900	46.1100	24.7400
2.1. Package	0.6800	0.6800	0.6800	0.6800	0.6800
2.2. Energy (all forms)	3.4600	3.5700	3.5700	3.5700	3.5700
2.3. Gross personal income	2.3200	2.3200	2.3200	2.3200	2.3200
2.4. Overhead costs	12.9200	31.4800	21.5200	39.5400	18.1700
3. Basic processing raw materials					
3.1. Amount - kg	1.1800	1.3000	1.3090	1.3300	1.4700
3.2. Selling price	15.53	41.40	26.11	52.10	19.24
3.3. Value (3.1. x 3.2.)	18.3254	53.8200	34.1780	69.2930	28.2828
3.4. Processing value	18.7458	48.4231	31.2529	60.4436	22.6259
3.5. Difference	3.2158	7.0231	5.1429	8.3436	3.3859
4. Profit (1. - (2. + 3.3.))	3.7946	9.1300	6.7320	11.0970	4.9772

Source: The calculation was done by the author based on the data calculation of fruit production and processing

In the fruit puree production in 2011, the processing value of fruits amounted to 36.30 RSD/kg on average (Table 4). The highest processing value was recorded in sour cherry and it amounted to 60.44 RSD/kg. The processing value of other analysed fruit species ranged from 18.75 RSD/kg (apples) to 48.42 RSD/kg (apricot).

The fruit processing value in puree production was higher by 15.38% on average in comparison with the market price of fruits as raw materials. According to the fruit species, the difference between processing and market value in puree production was significant in

apples and peaches. The processing value in apple puree production is 17.15% higher than the market value.

The processing value of basic raw materials in pitted crushed fruit (*Rotativa*) production in the analysed year amounted to 43.64 RSD/kg. The highest processing value of 60.60 RSD/kg was recorded in sour cherries (Table 5). In the analysed pitted crushed fruit production, the processing value is on average 14.28% higher than the fruit market value. In plum pitted crushed (*Rotativa*) production, the processing value is 16.32% higher than the fruit market value, whereas in apricot *Rotativa* production the processing value is 12.50% higher than the selling price of basic raw materials.

Table 5. Processing value of basic raw materials in the pitted crushed fruit (*Rotativa*) production in 2011 (RSD/kg)

Elements	Semi-processed fruit products		
	Apricot pitted crushed fruit *Rotativa*	Sour cherry pitted crushed fruit *Rotativa*	Plum pitted crushed fruit *Rotativa*
1. Selling price	98.50	134.50	60.50
2. Total costs (without basic raw material costs)	40.1600	51.4700	28.3100
2.1. Package	0.6800	0.6800	0.6800
2.2. Energy (all forms)	1.7400	1.7400	1.7400
2.3. Gross personal income	6.9600	6.9600	6.9600
2.4. Overhead costs	30.7800	42.0900	18.9300
3. Basic processing raw materials			
3.1. Amount - kg	1.2330	1.3701	1.4000
3.2. Selling price	41.40	52.10	19.24
3.3. Value (3.1. x 3.2.)	51.0462	71.3822	26.9360
3.4. Processing value	47.3155	60.6014	22.9929
3.5. Difference	5.9155	8.5014	3.7529
4. Profit (1. - (2. + 3.3.))	7.2938	11.6478	5.2540

Source: The calculation was done by the author based on the data calculation of fruit production and processing

In the analysed compote production, the fruit processing value was 79.61 RSD/kg on average (Table 6). The highest processing value of approximately 98 RSD/kg was recorded in the sour cherry processing. The processing value of other analysed fruit species ranged from 52.71 RSD/kg (plum) to 83.69 RSD/kg (apricot).

The fruit processing value is on average 48.87% higher than the fruit market value. Therefore, it is economically justified to buy fruits and process them into compote. According to the analysed fruit species, the difference between the processing and market price in compote production is particularly highlighted in peach and plum processing. In the plum compote production, the processing value of basic raw materials is 61.64% higher than the market price.

Table 6. Processing value of basic raw materials in the compote production in 2011 (RSD/kg)

Elements	Product				
	Apricot compote	Peach compote	Plum compote	Sour cherry compote (with pits)	Sour cherry compote (without pits)
1. Selling price	184.50	146.50	104.00	153.00	188.00
2. Total costs (without basic raw material costs)	113.3600	95.3100	71.3200	83.9900	93.8700
2.1. Additives (sugar, citric acid)	14.3900	13.4600	10.9300	8.7300	7.8000
2.2. Package	20.9000	20.9000	20.9000	20.9000	20.9000
2.3. Energy (all forms)	6.8800	6.9800	6.7000	6.6300	6.6300
2.4. Gross personal income	20.2900	13.9100	4.0600	4.0600	5.9500
2.5. Overhead costs	50.9000	40.0600	28.7300	43.6700	52.5900
3. Basic processing raw aterials					
3.1. Amount - kg	0.8500	0.7872	0.6200	0.7000	0.9600
3.2. Selling price	41.40	27.00	20.22	62.10	62.10
3.3. Value (3.1. x 3.2.)	35.1900	21.2544	12.5364	43.4700	59.6160
3.4. Processing value	83.6941	65.0279	52.7097	98.5857	98.0521
3.5. Difference	42.2941	38.0279	32.4897	36.4857	35.9521
4. Profit (1. - (2. + 3.3.))	35.9500	29.9356	20.1436	25.5400	34.5140

Source: The calculation was done by the author based on the data calculation of fruit production and processing

The processing value of fruits processed into compotes, purees, and pitted crushed fruit products (*Rotativa*) is higher than the fruit market value. The fruit processing value is 48.87% higher than the market value in compote production, 14.28% higher in pitted crushed fruit production, and 15.38% higher in fruit puree production.

The highest profit was recorded in the aprocot compote production (35.95 RSD/kg), whereas the lowest profit of 5.12 RSD/kg was recorded in the plum semi-processed fruit production (puree and pitted crushed fruit).

Conclusion

Fruit processing industry is an important factor of market stabilisation, fruit production development and fruit industry enhancement. Therefore, current industrial processing facilities ought to be better equipped, modernised and specialised in order to accomplish planned production structures and create new products which require advanced stages of processing. The advancement of fruit processing and the export of processed fruit products ensure more favourable production and economic results in comparison with the export of raw materials (fresh and frozen fruits).

The processing value of fruits is higher than the selling (market) value of fruits as raw materials. The fruit processing value in compote production is on average 37.0 RSD/kg or 48.87% higher than the selling fruit price. In semi-processed fruit production, fruit puree and pitted crushed fruits *Rotativa,* the processing value is 5.7 RSD/kg or 14.83% higher than the fruit market price.

Within the total cost structure, the direct production costs of the analysed fruit products account for 72.31% on average, whereas the indirect costs account for 27.69%. Within the direct costs, the material costs account for the greatest share of 60.05% on average, whereas the raw material costs account for the greatest share of 37.01% within the raw material costs.

In the analysed processed fruit production, positive financial results per unit of product are notable (32.4 RSD/kg), as well as high production efficiency (1.23) in compote production. The calculated efficiency ratio of all the other processed fruit products ranged from 1.09 (industrial marmalade) to 1.18 in jam production. In the analysed processed fruit production, the average profitability rate amounted to 14.45%. The highest profitability rate was recorded in compote production (the profitability rate of 23.00%). The largest quantity of production (work) performance was recorded in fruit puree production and it amounted to 0.0088 h/kg (113.64 kg/h), whereas the smallest was recorded in jam production (0.0375 h/kg or 26.67 kg/h).

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EKONOMSKA OBELEŽJA PROIZVODNJE PRERAĐEVINA OD VOĆA U SRBIJI

Mirjana Lukač Bulatović, Zoran Rajić, Ivana Ljubanović Ralević[3]

Rezime

Mogućnosti prerade voća su veoma složene, kako po asortimanu poluproizvoda, tako i gotovih proizvoda. U okviru širokog asortimana prerađevina od voća postoje i poluproizvodi koji se mogu plasirati direktno na tržište, ali isto tako mogu poslužiti i kao sirovina za više faze prerade, pri čemu, se ostvaruju i različiti ekonomski efekti. U radu su prikazani pokazatelji ekonomskih efekata (vrednost proizvodnje, troškovi proizvodnje, posebno direktni, kao i razlika izmedu vrednosti proizvodnje i ukupnih troskova) u svim fazama prerade za određenu vrstu prerađevina. Rezultati do kojih se došlo pokazuju da više faze prerade zahtevaju povećanje pojedinačnih troškova, ali povećani troškovi omogućuju postizanje većeg prihoda.

Prerada voća je ekonomski opravdana, jer je preradna vrednost voća veća od njegove prodajne (tržišne) cene. Preradna vrednost voća u proizvodnji kompota je veća u proseku za 48,87% u odnosu na tržišnu cenu voća. U proizvodnji poluproizvoda - voćne kaše i voćne rotativE, preradna vrednost u odnosu na tržišnu cenu voća je veća u proseku za 14,83%.

Ključne reči: *proizvodnja prerađevina od voća, vrednost proizvodnje, troškovi proizvodnje, finansijski rezultat*

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DEVELOPMENT INITIATIVE OF MANUFACTURING AND SERVICE CLUSTERS IN THE REPUBLIC OF SERBIA CORRIDOR 10 ZONE

Srđan Nikezić[1], Dragan Bataveljić[2], Milutin Matić[3]

Summary

In this paper, the authors strive to indicate some great possibilities for further development of rural areas in the wider zone of Corridor 10 in the Republic of Serbia. The significance of manufacturing and service clusters, networks and co-operations formed in rural areas, creating a large number of small and medium enterprises as a manner of running the entire industry through accelerated development of entrepreneurial initiative, is also stressed. A special kind of attention paid to the development of SMEs is a document from June 2008, adopted by the EU under the title:" A Small Business Act for Europe", with established principles and actions for operating in the section of small and medium-sized enterprises in the EU. The aspect of joining agricultural production and processing with service industry that could be implemented along the Corridor 10 is dominant in this paper. Clusters are networks of companies and institutions that complement each other creating cooperative supply chains, where food-service supply chains are especially stressed in the wider rural area of Corridor 10 with obligatory appliance of the European Alert System for Food and Feed (RASFF) standard, reaching over 7,000 notifications. Those notifications are related to potentially dangerous food or animal feeding and are issued by RASFF system founded by the European Commission.

Key words: *Corridor 10, rural areas, manufacturing and service clusters, small and medium enterprises, agriculture.*

JEL: *O13, O14, O15, Q18.*

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Introduction

Existing area in the Corridor 10 zone represents a very important element in joining production, first of all, agricultural products with service capacities along the Corridor 10. Connecting production, science and education is nowadays a necessary condition for enhancing competition thus providing conquest of new markets, new technologies and opening of new work places. In this way, a cluster networking becomes a necessity for sustainable industrial development in rural areas and in this case, the space beside the Corridor 10.

Precisely in small and medium enterprises, the clusters give an opportunity of forming network and cooperation that provides overall degree and capacity enhancement of total resources exploitation with high degree of flexibility and adaptability to new market conditions. [16] Their great vitality is often mentioned in theory and practice and it is frequently said in French literature: "A small enterprise – a small problem, a large enterprise – a large problem". [2] Comparative data show that at the time of contractive phases (fall and recession) manufacturing and service clusters along the main high way in Quebec, Canada, create larger number of small enterprises, and shut down a smaller number of large enterprises. By the nature of economic activity, network clusters assume greater vitality than large corporations as a response to globalization. [15]

Criteria of sorting network clusters through small and medium-sized enterprises are different from country to country, and often big financial organizations (MMF, the World Bank, the World Trade Organization), design their own criteria of classifying enterprises according to their size. Most of small enterprises are founded in the primary and tertiary sectors of economy which represents a possibility for linking such network clusters on a regional basis. [17, 20]

In addition to this, it should be mentioned that in the Corridor 10 there is a spectrum of natural values and suitability, important industrial, agricultural, water, infrastructural, tourist and other potentials, also rich material culture and heritage of civilization, around 2 000 villages and more than 100 cities with 75– 85% areas covered with agricultural space, inhabited by the 40 % of total Serbian population. [18]

In our country in the rural area of Corridor 10, there are great possibilities for production enhancement and healthy food processing (in husbandry, fruit growing, wine-growing, animal husbandry, vegetable growing and similar) which enables clusters creation as a network of enterprises and institutions that complement each other with their own cooperative competition and network its indented. Chains of supply are created with aim to satisfy needs of the Corridor 10 services users, and on the other hand to actualize new values, that is, profit for all enterprises in the chains of supply. In the first place, those are small and medium enterprises. The initial objective to increase food production, regardless of costs, is replaced with controlling the production surpluses and excessive costs. Redirection towards fulfillment of various social and ecological goals is also carried out through mechanisms which are in great deal separated from the production.

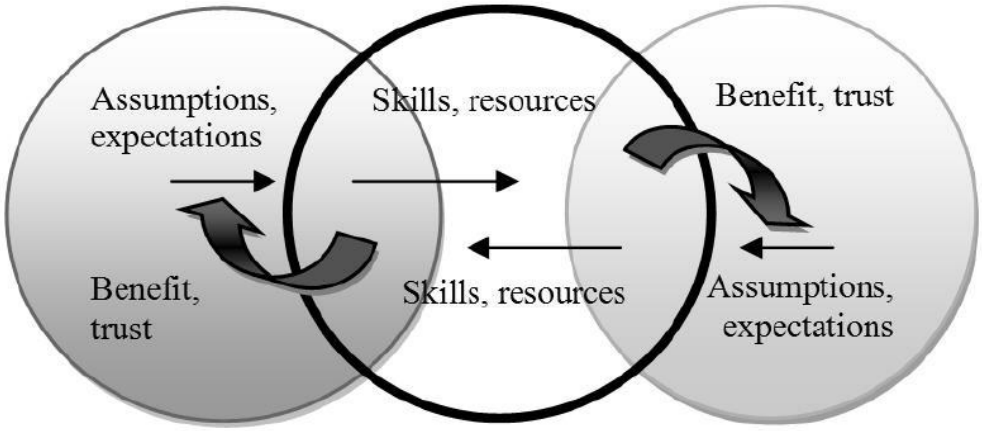
Concept of co-operation clusters and network

Enterprises are not isolated entities but parts of complex network where they perform their economic activities. Internal and external factors influence the organizational structure of an enterprise, its size and interactions created with its direct and indirect environment. Buyers, suppliers, distributors and competition represent a constantly present need to question market position and final satisfaction of buyers.

Economic ambience in which they operate and which is conditioned by a type of socially-economic relations, technology development, legal and economic benefits in certain phases of social development, stakeholders and shareholders' influence and various other elements affect management decisions, that is, the leadership.

Concept of cooperation implies joint operation of at least two enterprises having for a goal to change the situation they are in. Through chains of supply, every participant in the cooperation contributes with its own skills (production of industrial products, meat-processing industry products, or high-quality service) to profit making, through cooperation, for every participant of the supply chain. This leads to enhancement of mutual business success, greater employment and profits for each and every participant in the trade. Therefore, synergy effect is created by the cooperation. (Picture number 1) [16]

Picture 1. Elementary cooperation model [16]



Cooperation is characterized through following basic distinctions:

1. **Benefit orientation**. Every participant in a cooperation chain expects a certain benefit that has to exceed the one that could be achieved independently. (This is why it is necessary to provide linking of manufacturing and service industries in rural areas, because only in this way synergy effect of cooperation is created)
2. **Orientation towards partner's strength**. In its mutual operation, cooperation partners are oriented towards strong sides of every participant. Quality represents a base for accomplishing bigger cooperation profit, because in this way more significant value is provided for final buyer. (In this case, service users in the Corridor 10)

It can be concluded that enterprises that mutually complement each other in chains of supply enter cooperation. It is started with primary production in rural areas and ending with services in motels, hospitality facilities, shopping centers and other forms of services in the Corridor 10. [4]

Clusters are groups of enterprises in chains of supply that enter cooperation with similar service providers that support them. Therefore, clusters are networks of enterprises and institutions that complement them.

Successful clusters are mostly consisted of combination of three types of enterprises that mutually complement:

1. **Companies with significant market share and modern technology base doing business on the international market.** Hotel chains, gas station chains, liquor and food store chains, positioned along the Corridor 10 in Serbia.
2. **Suppliers or manufacturers, those are most often small and medium enterprises.** Those are manufacturers of agricultural, meat and other products in the rural area of Corridor 10, linked by clusters and providing logistical support for companies having their capacities in the Corridor 10 itself.
3. **Innovative and expert institutions that represent strategic support to clusters development.** Those are research institutes, institutions for professional training, specialized enterprises in the Corridor 10 and other institutions of similar profile.

Development of clusters has to be encouraged by economic policy, creation and promotion of clusters infrastructure. If there is a need, a cluster management can be formed for providing enterprises being components of clusters with services. Factors that affect the success of cooperation network (clusters) are: expected benefit for a cluster partner, readiness for knowledge exchange, information, organizational cultures, mutual trust and product quality of each partner.

Cluster management needs to provide active participation of all partners in managing network, internal and external linking and organization of mutual public and market appearance. [4]

Significance and advantages of small and medium enterprises clusters

The cluster concept becomes a significant instrument of structural and regional policy in Europe. Although it sounds paradoxical, clusters represent a response to rapid process of globalization and also, complex and turbulent business conditions. Small and medium-sized enterprises are flexible with simple organizational structure most often run by the owner all alone. [20] Also, their vitality can be monitored on the example of various countries, especially Italy, where the smaller enterprises are more adaptable in periodic phases, similar to a Chinese proverb: "A smaller boat moves more quickly". [3] These enterprises have a possibility of specialization, also meeting needs of the local market or doing business upon request and they have long-term contracts and that is especially important for primary production in the Corridor 10 zone. It is for sure that large world company chains in the Corridor 10 can lean on small specialized enterprises as on their

additional advantage in enhancing competition and efficiency. An example is successful business of the McDonald's restaurant in Velika Plana in the Corridor 10 leaning on local resources of supply. Clusters of small and medium-sized enterprises need to provide selling of new and improved products, to proceed in quality and technology, to produce and market services under competition prices.

In that way, through network creation and cooperation with international companies, clusters of small and medium-sized enterprises have a chance to profile their image and enter the international labor division upon large world companies, of course. [1] Advantages of cooperation in clusters for small and medium enterprises, and by that the community in a larger sense, are:

1. enhancement of production and employment in wider area of the Corridor 10,
2. innovation and technology progress,
3. expert degree enhancement and new knowledge acquirement,
4. product quality improvement, advanced satisfaction of buyers and increased degree of efficiency and effectiveness.

A final goal of cooperation is to create possibilities inaccessible to each partner individually. In this matter, almost all domains of a company's business can be an object of co-operation: joint supply, separation of the same jobs from several enterprises and their unification (ADP – automatic data processing), cooperation in the field of physical distribution, mutual appliance of marketing mix elements, market segmentation, new markets penetration, mutual development of human resources, research work coordination and so on.

The following is necessary for successful cooperation: mutual trust, willingness, flexibility, cooperation and competition, independent management and satisfaction of each partner in the chain through larger profit realization by means of synergy effect. [8]

Production potential and non-exploited possibilities in the area of Corridor 10

In the rural area of Corridor 10 zone, there are significant production potentials for creating small and medium enterprises clusters, especially in agricultural production, such as:

1. Production in husbandry (wheat, corn, other cereals, forage plants etc.),
2. Production of sugar beet, soya, sunflower, edible oil and similar,
3. Production in fruit growing (apples, pears, sweet cherry, sour cherry, apricot, peach, raspberry, blackberry, strawberry and the rest),
4. Production of plums and products made of plums (marmalade, jam, fruit preserve, stewed fruit and other),
5. Production of grapes and vine, that is, development and promotion of wine-growing and vine production,
6. Production in animal husbandry (beeves, sheep, pigs, horses, goats),
7. Production in vegetable growing (cabbage, tomato, paprika, potato, garlic, onions, carrot, melon). [18]

Numerous researches show and confirm that local advantages can be significantly better exploited through small and medium enterprises clusters (in this case the road Corridor 10) and also the resources we mentioned could be used and valorized. According to statistic data, dynamism in local development manifests in the best way in areas that are not urbanized or are exclusively agricultural. In the world also, areas that had the largest number of clusters of small and medium enterprises realized the highest growth rates. [9] Owing to clusters development of small and medium enterprises, particular areas accomplished outstanding results and because of this positive names are linked to them as: "The Third Italy" (Prato and Modena) [5], "Miracle" (Boss and Boys – Quebec, Canada) [11], "Golden Oases" (Languedoc – Roussillon, France) [14].

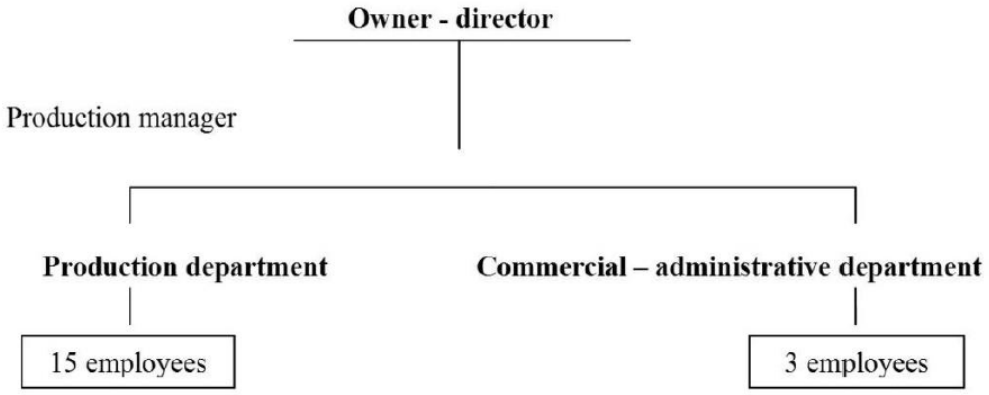
Similar to those examples, in following several years it is of crucial importance for Serbia to form one or more brand clusters of small and medium enterprises with production of characteristic, agricultural products above all in the Corridor 10 zone.

Characteristics of small and medium enterprises cluster networks in the EU

For the realization of local development of small and medium enterprises cluster networks in the EU necessary dispositions are provided such as: presence of information network and adequate bodies for support that will take needs of entrepreneurs into consideration, handle the team of professional advisers and experts competent to help in solving problems, carry out selection of entrepreneurs' projects and organize promotional and other activities. Also, during the village industrialization, for clusters demand, economic, geographic, social and physical support is provided. In this way through human resources management they are being exploited in the whole in an innovative manner, bringing education closer to contemporary needs, revalorizing economic resources until investment, exploitation of local incomes and savings are being significantly increased and various reliefs of participation come into realization. [12]

In such small and medium-sized enterprises, decisions are made in a narrower circle which makes the managing easier. (Picture number 2) Problems are such that one person can easily handle them and when this is not possible one can find a specialist for helping this problem to be solved. In this picture a management mechanism of an Italian company specialized for brand cheese production having perennial cooperation with mega-markets from the region is shown. There are 50 employees in the company and the owner pays attention especially to major buyers. It is interesting that for 15 years of cooperation with companies from our region nobody was ever at the lunch with guests except the owner. All the expenses are under the owner's control, and fewer employees personally take care of justification of expanses they make. [10]

Picture 2. Management of small enterprises for brand cheese production [10]



For realization of this kind of profiled economic structure, there is a necessity for stable pillars of economic development that will not only carry the main weight but also provide favorable position for network development of small and medium enterprises clusters. A typical example is Italy in which even until today not complete but only partial privatization has been carried out. It is estimated that only one half of Italian industry production comes from the private sector. [13]

A few people, even the experts, really do know what Nobel Prize nominee John Kenneth Galbraith states: "No industry is as uniquely Swiss as watch industry. However, it should be mentioned that almost half a century one and only company has produced mechanisms of almost entirely all Swiss watches, and its patron at the beginning was the state itself. Only boxes, bracelets for watches, package and commercial are the act of a private entrepreneurship. It is thought in other countries that this kind of state arrangement is in a conflict with thorough principles of free entrepreneurship, but the Swiss do not deal with those trifles". [6] Also, in France, particular banks (Societe Generale) and car manufacturer (Renault), regardless of a change of owner (state, shareholders, the rest) functions as universal European subjects. [22]

Strategy for entrepreneurship cluster development in the Republic of Serbia

In January 2003 the Republic of Serbia adopted the Development strategy for small and medium-sized enterprises in the Republic of Serbia for period from 2003 – 2008. In that period the most important government document determining a policy for supporting small and medium-sized enterprises is "Plan for development promotion of small and medium enterprises 2005 – 2007". The European bill on small and medium-sized enterprises from June 2000 is accepted as starting point of both documents in which significance of small enterprises and entrepreneurs is pointed out regarding growth, competition and increase of employment in the EU. It is pointed out in the bill what should be done in order to improve business environment of small enterprises. [7]

And beside the existence of all those documents, the policy of development promotion of small and medium-sized enterprises has not been carried out sufficiently enough, but merely came down to unadjusted activities of particular ministries and institutions in charge of this field.

Based on a document from June 2008, adopted by the EU and named:

‘’A Small Business Act for Europe’’, the Republic of Serbia issued a new development strategy for small and medium-sized enterprises for period from 2008 to 2013, with basic cause for Serbia to get strong, developed, and internationally competitive and export oriented sector of small and medium-sized enterprises. Also, the Ministry of economy and regional development in cooperation with Deutsche Gesellschaft für Technische Zusammenarbeit from Germany creates “Project for initiative of clusters development in 2007”. [7]

However, the implementation of these documents has implied providing with certain means through adequate ministries, agencies and funds from the country and abroad, which has not happened completely in the practice. Until now, the biggest progress has been accomplished in the realization of principles for faster and cheaper enterprises financing and financing and taxation, while the weakest results have been achieved in the realization of principles of knowledge and skill availability and in providing stronger support of interest of all enterprises, that is, their clusters in the public sector. [19] In the paper, we did not stress some special risks that have caused inefficient implementation of adopted strategies and documents, but we can list some of them: political instability and absence of consensus on important questions, insufficient development degree of human resources, inability of public sector institutions to fulfill demands of efficiently servicing entrepreneurs, incomplete institutional infrastructure, sluggishness in the process of decentralization and reforms of administrative structures, lack of financial resources, feeble sector organization of small and medium enterprises, lack of management knowledge in small and medium enterprises on challenges considering coordination with open market economy, insufficient willingness of entrepreneurs to acquire new knowledge and skills and insufficient capacities of public and private sector to completely exploit the EU access and development funds as well as funds of other international organizations. [21, 22]

The influence of the world tourism market and the need for synergy of tourism and food industry of Serbia on the Corridor 10

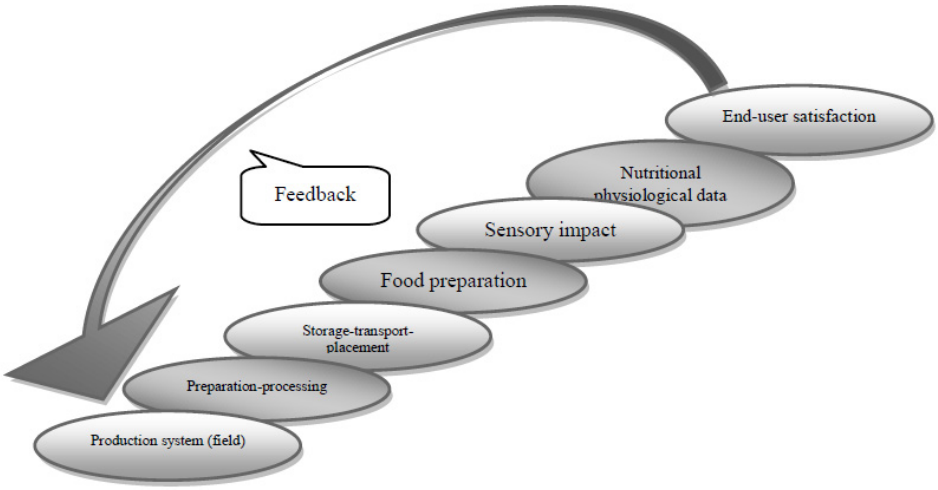
World trends in tourism directly affects the establishment of coherent links and closer cooperation between Serbian production and service of economic agents: Internationalization Gastronomy (national, regional, local and etno-kuhinja); Second Gastropotrosnje growth in the world:

1. Internationalizati of Gastronomy offerings (national, regional, local and ethno kitchen);
2. Growth of Gastronomy in the world;
3. Ethical consumerism, which includes product selection for end users that respects

their human rights, social responsibility, caring for the environment and animals, and Strengthening information systems by linking all partners in the supply chain of the end-users. [23]

New processing of agricultural habits has the biggest needs for the food to be safe, healthy and to be good quality, with regard to environmental and ethical considerations. Customer satisfaction is a prerequisite in shaping whole identity of destinations around and strengthening the positioning of Serbia as a country on the Corridor 10.

Picture 3. Contemporary trends in food production [23]



Gastronomic offer should add a new trend dimension which will contribute to the strengthening of the market in above mentioned destinations. For user of the goods it is particularly important:

a) Healthy food
b) Lack of time due to transit passage through our country, and
c) Variety of offers that depends on the origin, age, habits and interests of consumers.

The world, in transit, expresses great curiosity for different forms of cuisine and active eco-rural tourism. Serbia, with its climate characteristics and the intact nature has an significant corporative advantage for rural eco-tourism and eco-gastronomic offer. In Figure 3, it is necessary to observe the feedbacks over what kinds of food or finished products that are recognizable and authentic as Balkan flavor. It is not only necessary to produce food, but to protect its geographic origin and constantly to emphasize it in commercial messages to consumers.

By 2015, 40% of the total value of European food trade will be used in the gastrointestinal (foodservice) market segment. The term gastro in Corridor 10 includes the preparation and consumption of food in the hotels, motels, restaurants and bars, as well as alternate channels (gas stations and auto services). [24]

Users of Corridor 10 that are passing through our country encounter with other culture and come in direct contact with the local population, and in doing so often ask the ethical question:

a) What are the working conditions of the restaurants and hotels in the transit highway?
b) Are the local people and the local companies involved in the realization of tourist packages so tourist can get to know Serbia in the short period of time?
c) Are the groceries in the hotels and restaurants menus homemade and natural origin?
d) How are the hygiene conditions in the restaurants, hotels, gas stations and car services?

Is it on the road ensured absolute safety for tourists that are in transit pass?

Tourism has become a global industry and has a great impact especially in the rural areas along the Corridor 10. It directly has an impact on people and their well-being, and it is expected to modify the approach towards meeting the strict requirements with respect of ethical principles and sustainable development.

Accommodation capacity, the importance of human resources for the development of the hotel, catering, achieved touristic trade and tourist spending

Accommodation capacity (in addition to traffic and capacity for food) constitute the basic factors of tourist offers on Corridor 10, from their size, structural characteristics and dynamics of construction can be seen and can reach the level of development and the overall quality of the tourist offer of Serbia. In Serbia there are 235 active hotels (without hotels that are in the process of adaptation and those which the time for categorization expired). The most common are buildings with 2 and 3 star (93 and 76), and the least represented with 5 stars hotels. Total is 13,641 rooms and 23,551 beds. Most rooms and beds are in hotels with 3 stars (5126 rooms and 8923 beds). The least are in 5-star hotels (1,103 rooms and 1482 beds).

The total number of graded accommodation facilities in Serbia according to clusters is following:

- Cluster of eastern and western Serbia participates with 60% of accommodation capacity,
- Cluster of Vojvodina with 24% of accommodation capacity, and
- Cluster of Belgrade with 16% of capacity. [25]

The importance of human resources for the successful implementation of development policies on Corridor 10 in the part of determining the tasks related to personnel can be classified into several groups, which by its contents constitute separate units. The main areas related to human resources include:

- Recruiting personnel,
- Orientation of personnel,
- Positioning and promotion of personnel,
- Education and Workforce development,
- Salaries and other means of financial compensation for the work,
- Benefits, and
- Protection of personnel. [26]

By analyzing elements of details related to human resources, we can conclude that the hotel catering facility as a representative object of the Corridor 10 should combine all the features of this activity reflecting on them in the process of implementation of an integrated product. Work technology, organization and management techniques, shaped by the specific characteristics of the staff which depend on the type, capacity and category of hotel may be more or less pronounced. Authentic blend of hospitality and non-hospitality service, defines the need for diversity and heterogeneity of human interest profiles, creating conditions for the individualization of the labor process, and the relative independence of each position. In the hotels there is a time discontinuity in the work that is manifested in the form of annual, monthly, weekly or daily imbalances. This is particularly prominent in certain occupations, primarily in the diet sector.

Corridor 10 is ideal for recruiting labor force from marginal areas with the obligation those applicants must have a clear picture of the activities and responsibilities of the job for which they are applying for. Catering is the largest part of the total purchase of tourists. It gives the possibility of hiring a large number of people and the creation of competitive advantage in the market because of cheap labor. Competitive advantage can be seen in the diversity and variety of tourism products to certain clusters in the Republic of Serbia on Corridor 10

Tourist traffic and tourist spending shows the real picture of the situation in the Republic of Serbia. According to the data of the Statistical Office of Serbia for the period 1979-2007 , the results and numbers of domestic and foreign tourists and the number of nights they spent in Serbia shows a downward trend from 1979-2007. For example in 1985 there were about 4 million domestic tourists and over one million foreign tourists. In 2007 number that domestic tourists accounted was around one and half million and regarding foreign tourists that number was about 600,000. [27]

Tourist spending of local and foreign tourists wasn't shown at the real conditions since 1990. The dissolution of the country, war and its effects reflected negatively on tourism and the industry. This is primarily regarded to a drastic decline in foreign tourist traffic particularly going around our country and bypassing Corridor 10 on the way to certain tourist destinations. The lowest foreign currency income from tourism was achieved in 1993. Since 1994 and with the stabilization of the exchange rate led to slight increase of foreign exchange earnings. Task of tourism and hospitality workers in the Corridor 10 is the development of strategic planning: increase market share of users, profit, and development of new tourist destinations and connect supply chains from farms to consumers.

The development of agricultural machinery in the Republic of Serbia as a factor for improvement of agriculture

Without proper development of agricultural machinery the Republic of Serbia in the future will not be able to adequately provide arable land to allow profitable production of food, including land in the region of Corridor 10. The Republic of Serbia has 5.1 million hectares of agricultural land which is 4.2 million hectares of fertile fields. With modern and high quality technology, this area can produce food for about 50 million people. Age of today's machinery is 15 to 30 years, and they represent a key factor in producing food. With modernization of the domestic factories of tractors and combines and with usage of the latest mineral resources for the protection of agricultural production to the Republic of Serbia, each year could be saved € 291,737,929. The potentials for food production in Serbia are presented in Table 1 [28]

Table 1. Potentials for food production in the Republic of Serbia (2010)

No.	Types of land use	Surface area	
		ha	%
1.	Agricultural land	5.093.000	100
1.1.	Arable	4.221.000	82.88
1.2	Pastures	833.000	16.36
1.3.	Marshes, fishponds, land covered in reed	39.000	0.77
Food production estimates: in Serbia, food for over 50 million people can be produced.			

In the last 20 years the Republic of Serbia is facing with complete devastation of production of agricultural machinery. In order to achieve major tasks such as the production of food for 50 million people it is necessary urgent revitalization of this sector. [29] If Republic of Serbia wants to achieve optimal agricultural production it is needed in the next 10 years to provide the new structure of the domestic production of tractors which would be able fully to meet the demand for the domestic market and for the exports. This would ensure better conditions for a much higher production in the whole sector of Corridor 10 and at the same time develop manufacturing industry of agricultural machinery. The entire supply chain would initiate the development of rural areas by linking agriculture, industry, tourism and hospitality. In Table 2 are given the numbers of tractor that are needed for the next 10 years. In the table are not given the needs for combines but range is from about 750 units per year of which 650 would be produced in Serbia and 100 would be imported. [30]

Table 2. Needs for tractors in 2010-2020 [31]

No.	Tractor category (kW)	Required (pcs/year)
1.	Two axle	11.000
1.1.	Light (30-60)	8.800
1.2	Medium (31-130)	2.000
1.3.	Heavy>130	200
2.	Mini tractors (15-30)	300
3.	Single axle (5-15)	10.000
4.	Moto tools (up to 15)	15.000

For development of agricultural machines it should be used potential of companies such as IMT, IMR, Dragon, IPM, DMB, Flag, and the potential of their subcontractors, to re-establish again industrial production in the Republic of Serbia as a basis for the provision of agricultural production and creation of clusters not only on Corridor 10 but on the whole territory of the Republic of Serbia. We should not neglect the participation of small and medium-sized enterprises which are the basis of cooperative coalition of industrial production as well as the basis for the commencement of production from farm to fork or the beneficial purchaser in hotels, restaurants and other tourist facilities offer.

Clusters as a stable basis of market design in Serbia

The first cluster initiatives in Serbia were launched around 5 years ago. However, even after this time there was no definition of a minimum of common interest. This is necessary because of the gathering companies and associated institutions but there are small numbers of success cases. Therefore it is necessary to build a new model for promoting territorial association of companies of particular sector and the inclusion of a large number of development institutions. Of course, we should point out the fact that in Serbia exist examples of association which resemble to clusters such as the concentration of plastics manufacturers in Stara Pazova, gathering together garments and knitwear like Arilje did, merging of information and communication technologies in Belgrade and Novi Sad and many others. Significance of these concentrations is that in these areas the number of companies and employees in the clusters is much higher than the national average. This type of concentration of firms and employees are referred to the regional cluster although they are often used as terms like "natural" or "statistical" cluster.

What is characteristic for Serbia and the Balkans is the fact that the first mapping of local and regional concentration of firms and employees sectors in this area is done in 2010. This is done in the framework of the EU project which is known as SECEP (Support to Enterprise Competitiveness and Export Promotion). The importance of this mapping is because it identified clusters in Serbia in 38 different categories but this study is unfortunately unnoticed among the holders of public policy as well as between domestic and foreign development agencies. This is because these subjects have not paid sufficient attention to the development of clusters as geographic concentrations, but the center of its activities was dedicated to the development of so-called cluster initiatives. Initiatives like this this are established in Serbia in sectors and areas that do not have significant concentrations of companies as opposed to the practices in the world. Claster initiatives are established where already exist concentration which can become cluster.

These cluster initiatives in the Republic of Serbia are established as legal entities with the Agency for Business Registers mainly as an association. However there are cases where these initiatives are registered with this agency as companies or foundations. Currently according to official data of the registry associations there are 63 registered cluster initiatives and three are still in the registration process. Certainly to this number should be added seven initiatives which are registered as companies and four initiatives which are registered as a

foundations. Total number is 77 cluster initiatives in the country. It is interesting to note the fact that these cluster initiatives are mainly established in big cities like Belgrade, Novi Sad, Nis, Kragujevac and Subotica, while the number of clusters initiatives in smaller towns and villages is much smaller. Examples of such clusters in the smaller communities can be found in Kraljevo, Loznica, Rumi, Vrnjacka Spa, Knjaževac Arandjelovac, Raca and in the other cities and municipalities in Serbia.

What can be called one of the biggest problems in the business of most cluster initiatives is the fact that their capacities (both operational as well as financial) are at the very low level. The normal functioning of most cluster initiatives hinders their financial viability given that the main result of this their financial instability is lack of full-time employees (their work is performed by volunteer employees of certain members of the cluster). Even where there are employees their number is negligible and does not exceed two except for Vojvodina metal clusters which employs about a dozen workers and associates (women mostly dominated among employees within this cluster).

Also a very important fact about cluster initiatives is the number of companies that are participating in their work and it is 917 with a total of 36,000 employees. Intra-dominated are entrepreneurs, micro and small enterprises, while the share of medium and large enterprises is significantly less. Most states have Sumadian flower from Kragujeva total of 170, then Dunder from Nis with 89 and the Vojvodina metal cluster with 74 members. Although the members make supporting institutions (institutes, faculties, schools, research centers and the like) but their participation in the initiative is formal and negligible. Few initiatives have more than three supporting institutions which represents the minimum requirements according to the criteria of the Government of the Republic of Serbia.

When it comes to turnover of newly created clusters, the financial data for 2011 shows that the highest record had a Member of the Vojvodina metal cluster (270 million euros). On the second place regarding height of the turnover were members of the ICT (information and communication technology) sector (ICT NET with around 87 million euros and Vojvodina ICT with 44 million euros), while a significant turnover of 45 million euros was made by the members of the cluster initiatives FACTS textile industry. In addition to these sectors and within the tourism and construction industries it has been done a considerable turnover. Thus in the tourism sector by members of the Initiative PRO VITA was achieved over 32 million while the members of the construction industry of Nis (Dunđer and BRICK BRICK) recorded a turnover of around 15 million euros. Of course the amount of the income is usually followed by adequate export. Members of Vojvodina ICT had earned 20 million euros and they had been signed to the group of the biggest exporters. Also to this group of the largest exporters we can add FACTS which achieved 11.5 million net exports and ICT which achieved exports of 10 million [32].

It is important to emphasize that the cluster initiatives are very important to its members because they provide many services as the organization of seminars, conferences and training, joint marketing, visiting fairs and advocacy. Also just to a much lesser extent these cluster initiatives mediate in the joint procurement of raw materials as well as developing

new products while other services are mostly sporadic (they are related primarily to external funding). Pointing to the provision of services by the cluster initiatives it is important to mention that users of these services can be not only just members of the initiatives but also other companies that deal with the same or similar activities.

Projects funded by the Government of the Republic of Serbia, Autonomous Province of Vojvodina and international donors (the major international donors are European Union, GTZ, USAID and LEDIB), provide the greatest opportunities for cluster initiatives in Serbia so that they have the most experience in the work, precisely on these projects. Given this fact the Government of the Republic of Serbia in 2007 launched a program to fund projects of cluster development through the support of cluster initiatives. What is important to note here is that through these program they support cluster initiatives which gathers together at least 9 companies and at least 3 associated institutions which are making a total of at least 12 businesses subjects. Cluster initiatives have to be entered in the Register of Associations in Business Registers Agency. Between members of the clusters must be at least 60% of small and medium enterprises and entrepreneurs and at least one scientific research organization.

When it comes to financing projects submitted under this program it should be noted that the cycle lasts one year and that it implemented by the Ministry of Finance and Economy in cooperation with the National Agency for Regional Development. The amount of funding varies significantly over the years. The amount from the budget of the Republic of Serbia in 2007 was 260,000 euros, 2008 was 375,000 euros, 2009 was 330,000 euros, 2010 was 300,000 and in 2011the amount was 200,000 euros (funds received under this program must be co-financed by the cluster members in the amount of 50%) [32]. Of course, it should be noted that there is a difference between initiatives in the amount of attracted funds so in the first place according to this criteria of the initiative comes Vojvodina metal cluster, ICT NET, Vojvodina ICT, FACTS, Cheese Cluster South Sumadia flower cluster 'and sub regions Subotica-Palic.

Thus as was mentioned from above, it can be concluded that cluster development in Serbia began at 2006, while the implementation of the program to support cluster development was achieved in 2007. The name was "Programme for Business Incubators and Clusters in the Republic of Serbia 2007-2010." Norwegian government has helped financially the implementation of this program. However, until now there are a large number of obstacles in the development of clusters in our country, and the main reasons are:

1) lack of connection between members within the cluster;
2) lack of connection of the clusters in the country and abroad;
3) poor management development and engagement in the creation of cluster development strategies [33].

In order to overcome these obstacles and to achieve better results in cluster business it is necessary that state and the private sector get more and more seriously involved in the work on the improvement of the cluster in the country. In doing so it is very

important for the state to establish a general micro-economic stability of the country's own efficient investment and foreign investment as well as to achieve certain macroeconomic and political stability which can achieve the fulfillment of the three key roles in the economy including:

1) establisment of stable state institutions;
2) providing legal and economic framwork;
3) the cration of healthy macroeconomic policies.

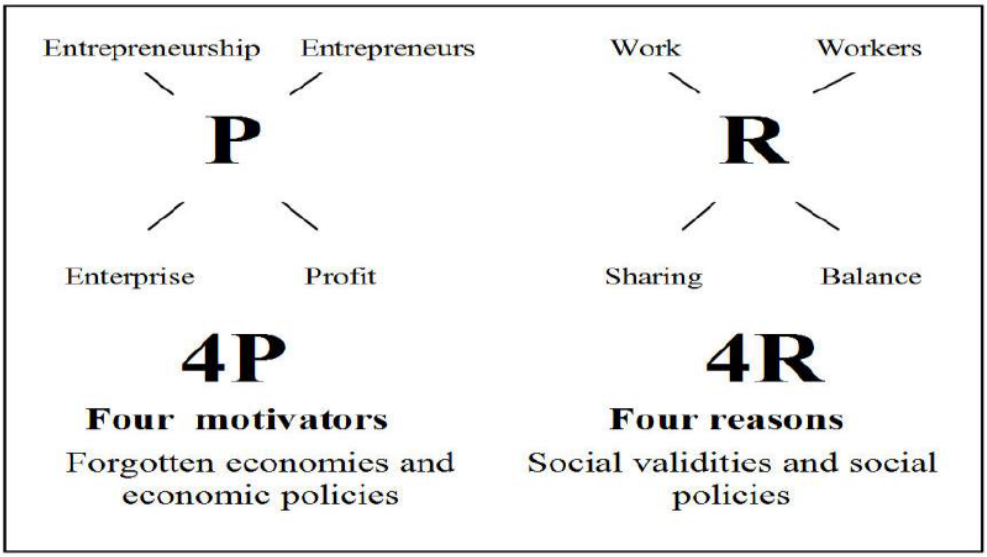
Conclusion

All areas in the Republic of Serbia in the zone of Corridor 10 have a number of its characteristics and specificity. It is primarily expressed in its richness of natural and human resources, and through various economic activities, with significant material and cultural goods with distinct characteristics, trends and diversity in some areas.

For total realization of cluster's contents and quality it is necessary to enhance synchronization between economic efficiency and social optimum (Picture 4).

The synchronization includes a new way of business and action and a new way of understanding the essence of work and sharing the work results. The optimum among profit, entrepreneurs and shareholders and just share of executive work among employees is a paradigm of new equilibrium in industry.

Picture 4. Economic efficiency and social optimum [34]



Small and medium enterprises clusters in the wider zone of Corridor 10 in rural areas should be an instrument for further development of current regional, that is, entrepreneurship advantages. They are not the answers to short-term solutions, but strategy for deep structural

changes. An assumption for successful cluster development in the Corridor 10, especially in the agricultural production, includes presence of a sufficient number of complement and active enterprises that have to strive for the European competitive level in order to realize co-operational access to large world companies that do business in the Corridor 10 or will be doing it.

In clusters, it should be focused on key fields that are practically predictable and that form firm synergy of joint capacity.

Clusters in the Corridor 10 should have adequate and professional structures of management and leadership. Cluster management together with adequate public organs should provide promotional programs, partnerships and innovative models of services.

Problems that can emerge are: minor compatibility of structure and business culture of partner enterprises, lack of legal and financial possibilities for cooperation, lack of long-term entrepreneurship spirit and absence of experts, low level of mutual co-operational trust among partners and other institutions, lack of knowledge considering partners, not including all partners in the network and unclear and unreal expectations from the cooperation.

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PODSTICAJ RAZVOJA PROIZVODNO - USLUŽNIH KLASTERA NA RURALNIM PODRUČJIMA U ZONI KORIDORA 10 U REPUBLICI SRBIJI

Srđan Nikezić[4], Dragan Bataveljić[5], Milutin Matić[6]

Rezime

U ovom radu autori nastoje da ukažu na velike mogućnosti za dalji razvoj ruralnih područja u široj zoni Koridora 10 u Republici Srbiji. Takođe je naglašen značaj proizvodno-uslužnih klastera, mreža i kooperacija koji se obrazuju na ruralnim područjima, stvarajući veliki broj malih i srednjih preduzeća, kao način vođenja ukupne privrede uz ubrzan razvoj preduzetničke inicijative. Kao poseban vid pažnje koji se poklanja razvoju malih i srednjih preduzeća je i dokument iz juna 2008. koji je usvojila EU pod nazivom: "A Small Business Act for Europe", sa utvrđenim principima i akcijama za delovanje u sektoru malih i srednjih preduzeća u EU. U radu je dominantan aspekt povezivanja poljoprivredne proizvodnje i prerade sa usložnim delatnostima koje se mogu implementirati duž Koridora 10. Klasteri su mreže preduzeća i ustanova koje se dopunjuju stvarajući kooperativne lance snabdevanja, gde su posebno apostrofirani prehrambeno-uslužni snabdevački lanci na širem ruralnom području Koridora 10, uz obaveznu primenu standarda Evropskog upozoravajućeg sistema za hranu i prehranu (RASFF) koji broji oko 7.000 obaveštenja. Ova obaveštenja se odnose na potencijalno opasnu hranu ili ishranu životinja i izdata su od strane RASFF sistema čiji je osnivač Evropske komisije.

Ključne reči: *Koridor 10, ruralna područja, proizvodno-uslužni klasteri, mala i srednja preduzeća, poljoprivreda*

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EU ACCESSION IMPACTS ON THE COMPARATIVE ADVANTAGES IN AGRICULTURAL TRADE: ROMANIA'S CASE

Mirela Rusali[1]

Summary

The research aims at evaluating the accession impacts on Romania's agriculture by analysing the comparative advantages in trade relations with EU. The method used the calculation of the trade specialization degree index constructed from the original Lafay index and adapted on the agricultural sector. While providing a rank of products by their level of specialization on the international market, the research results indicate a decrease of the specialization level and a loss in the trade diversification of the Romanian products. The assessments reveal that certain products previously expressing an export potential, have suffered in the post-accession period an important decline in their commercial specialization: such is the case of live animals and animal products, which, although still have positive trade balance, the net export amounts registered significant declines. The results identified similar loss for oilseeds, milk and dairy products.

Key words: *agricultural trade, comparative advantages, EU accession*

JEL: *Q17, F14, F15*

Introduction

Several methods frequently used in the analysis of foreign trade models are based upon the calculation of the trade comparative advantage indices, relevant for the assessment of competitiveness of certain products or economic sectors, in relation to the structure and evolution of commercial flows, or of the specialization level of traded products.

A wide literature in the domain has been developed (Banse et all, 1999; Brasili, 2008; Gorton, Davidova, 2001). Competitiveness is a relative concept, for the reason that being determined by endogen and exogenous factors, to whom depends how well the economic sectors/entities/ products perform comparing to international competitors, will have any influence on it. On

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one hand, improving competitiveness relates to the use of own resources to amplify the value of output, on the other hand, factors such as policies and financial mechanisms, for instance, the exchange rate, belong to the broader macroeconomic context.

As no country could be net exporter in all the products (Porter, 1990), the benefits of international trade reside in providing the needed goods. Products specialization should take place where the country is relatively more productive, while imports, in less productive than foreign trade partners.

While the theory of comparative advantage indicates that specialization is a precondition for gathering gains from trade (Kowalski, 2011), any substantive interference with this process, including sectoral or macroeconomic politics, can reduce these gains.

Within this framework of ideas, the research objective was to identify the advantages, or disadvantages, of the Romanian agri-food products on international markets, based upon the method of evaluation the specialization level of traded products relative to the EU.

The appraisal of the level of specialization is a commonly used method in the foreign trade studies, as the indices are relevant for the assessment of competitiveness of certain products, or economic sectors, in relation to the structure and evolution of commercial flows. Thus, the empiric results reside in assessments of Romania's competitiveness in external agri-food trade experienced in the period pre-and post-EU accession.

The investigations highlight the opportunities of products with expressed export potential, respectively, the sensitive areas affected by net imports of product groups, aiming to contribute to the improvements in the national sector performance in the context of growing competition of foreign producers.

Researching Method

The present research was based upon the calculation of the Lafay index that measures the specialization degree of a certain country in a certain sector. According to previous authors (Latruffe, 2010; Zaghini, 2003), the method of appraisal the commercial advantages of a country or sector in the foreign trade can be used to analysis its external competitiveness.

The Lafay index has a larger coverage area, as in its original form it takes into consideration the trade shares in each sector in relation to GDP, but it can assess the contribution of each product in relation to the corresponding importance in trade: the comparative advantage of a country i in producing a product j is measured by the share of trade balance of product j in total trade, multiplied by the share of total trade of product j in total country trade.

The specialization index gives the possibility to thoroughly asses the comparative advantages, taking into consideration both the export and import flows and the differences between the trade balances of each product compared to the total trade balance. The index representativeness and the distortions of the analysis depend upon the data aggregation level.

The positive values of Lafay index reveal the existence of comparative advantage for a certain product j. The higher the value of the index, the higher is its specialization level or the comparative advantage. The negative values reveal a comparative disadvantage (without meaning that the sector is not important for the national economy).

The method has been used to evaluate the level of specialization of Romanian agri-food products in the international trade relations. In such purpose, the index has been adapted to measure the contribution of each Romanian agricultural product, at 2 digit aggregation level corresponding to the Combined Nomenclature (CN), to the total agri-food trade. The study-case material was based on empiric evidences of Romania's agri-food trade flows within the period 2006-2010, using the EUROSTAT trade statistics online database.

Results of Research

Under the influence of the developments in the domestic economy subsequent to the EU accession, the period 2007-2009 was reflected in the country's foreign trade by an intensification of both import and export flows, yet Romania remains deficient in agri-food products since 1990. The total agricultural trade experienced a 44% growth compared to 2007, i.e. from 4.4 to 6.4 billion Euros in 2008 and 6 billion Euros in 2009.

In the pre-accession period, the agri-food trade between Romania and the Member States developed under the influence of the European Agreement on agriculture and EU became Romania's main trade partner. In the year 2007, Romania obtained the membership status, while the agri-food exports on the intra-Community market contributed to the increase of 9.7% in Romania's gross value added obtained in agriculture (Rusali, 2012).

In the post-accession period, the Romanian agri-food sector experienced a growing openness to foreign markets, significantly more important than indicators derived from national development. Romania is highly dependent on external agri-food markets, sharing 83% in 2009 and the indicator reflects the low performance facing international competitiveness, while EU is the major trade partner.

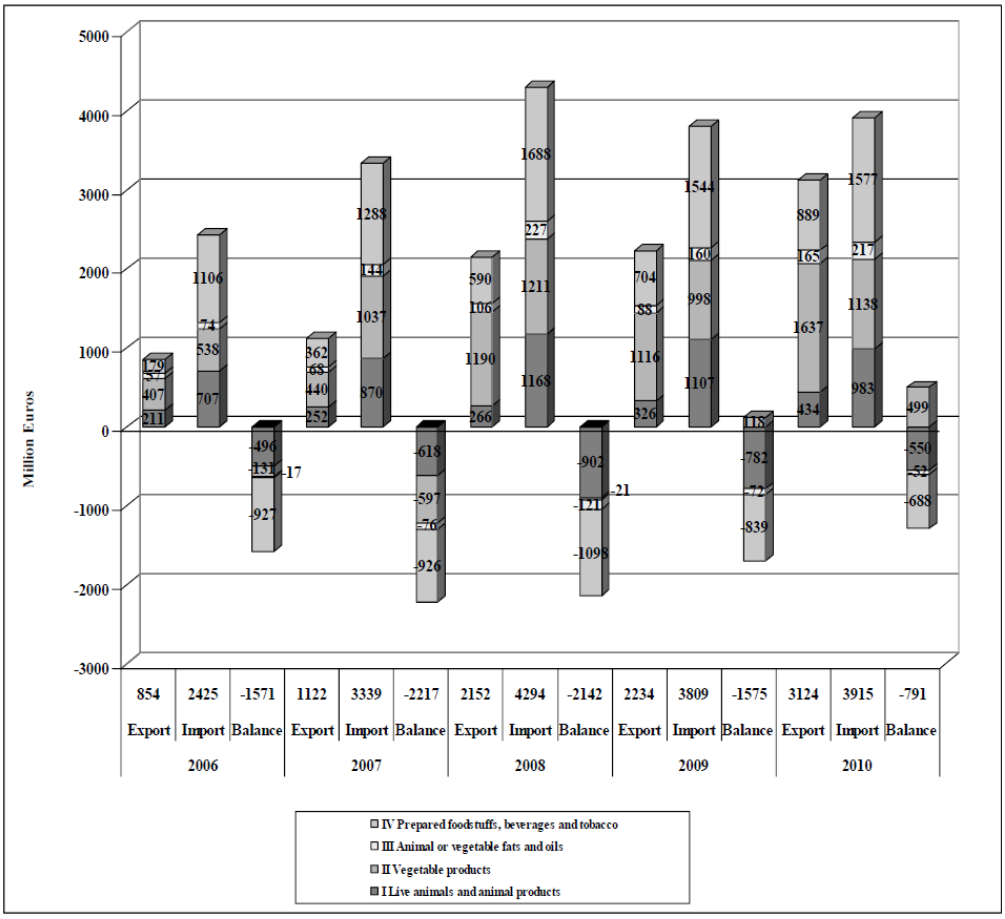
Trade policy and exchange rate in recent years have favored high levels of coverage of imports by exports, although lower than at national economy level; in the year 2010 it amounted to 80%.

According to the statistics presented in Fig. 1, the total agricultural trade increased continuously, from 3.28 billion Euros in 2006 to 7.04 billion Euros in 2010, while the trade unbalance tended to recover, after the deep historic deficit of -2.2 billion Euros in 2007, to -791 million Euros in 2010.

The results of research provide evaluations and dynamics of the trade specialization of Romanian agricultural and food products.

The calculation of the Lafay index, adapted on the agricultural sector, allows the rank of the products with comparable advantages on foreign markets. Table 1 presents the indices calculated on products aggregated by chapters of NC, in the period 2006-2010.

Figure 1. Dynamics and structure of Romania's agricultural trade (in period 2006-2010)



Source: processing of National Institute of Statistics data, http://insse.ro

Romania's agri-food foreign trade describe a specialization pattern on cereals, live animals, oil seeds, as well pre-accession some produces as fats and oils, vegetables and beverages, corresponding to the products evidenced with highest level of the indices.

The indices reflect the recent main changes in Romania' agri-food foreign trade pattern; the method is useful in designing a dynamic perspective chart based on their evolution.

The evolution of the indices estimated for the analyzed period shows a decreasing trend of the specialization level and a loss of commercial diversification of the Romanian agri-food products groups for almost all products aggregated by chapters, except for tobacco following the year 2007. As well, positive changes were identified, in the year 2010, on meat, products of the milling industry, sugar and residues of food industry.

Table 1. Trade specialization index of Romania's agri-food products (in period 2004-2010)

CN Code - Denomination	2006	2007	2008	2009	2010
01 - Live Animals	6.39	5.60	2.35	2.45	-3.96
02 - Meat and edible meat offal	-7.86	-5.54	-7.12	-4.75	0.78
04 - Dairy produce	0.62	-0.66	-1.74	-1.51	-0.42
05 - Products of animal origin	-0.17	-0.19	-0.26	-0.30	-0.09
06 - Live trees and other plants	-0.54	-0.58	-0.94	-1.00	-0.03
07 - Edible vegetables, roots, tubers	0.36	-0.24	-0.63	-0.91	-0.67
08 - Edible fruits & nuts	-0.92	-1.54	-1.47	-1.36	-0.90
09 - Coffee, tea, mate & spices	-1.41	-1.03	-1.28	-1.37	-0.07
10 - Cereals	5.92	2.00	10.59	10.11	3.91
11 - Products of the milling industry	-0.71	-0.95	-0.98	-0.73	0.15
12 - Oil seeds & oleaginous fruits	7.05	5.27	8.11	4.96	-0.68
13 - Lacs, gums, resins, o. veg. saps	-0.15	-0.13	-0.17	-0.17	-0.01
14 - Vegetable products nes e.g. plaiting	0.11	0.06	0.02	0.01	-0.09
15 - Animal or vegetable fats & oils	1.38	0.63	0.27	-0.82	-0.47
16 - Preparations of meat	0.53	0.34	0.12	0.02	-0.31
17 - Sugars & sugar confectionery	-2.27	-1.49	-2.54	-2.47	0.30
18 - Cocoa & cocoa preparations	-0.50	-0.66	-0.79	-1.06	-0.04
19 - Preps. of cereals, flour, starch etc.	-0.12	-0.40	-1.05	-1.13	-0.50
20 - Preps. of vegetables, fruits, plants	-1.20	-0.94	-1.38	-1.16	-0.23
21 - Miscellaneous edible prep.	-1.64	-1.81	-2.20	-1.97	-0.09
22 - Beverages, spirits & vinegar	0.02	0.05	-0.24	-0.57	-0.51
23 - Residues & food industry waste	-1.04	-0.71	-2.01	-2.03	0.14
24 - Tobacco & tobacco products	-3.88	2.92	3.35	5.77	3.80

Source: author's calculations, using EUROSTAT agricultural trade statistics database

Products that have been obtained positive values higher than one , indicating the rank revealed by the indices, are those belonging to chapters: 01 - live animals (8.6), 12 - oilseeds (3.8), 15 - fats and oils (2.8), 07 - vegetables (1.6), 04 - dairy products, eggs, honey (1.3), 22 - drinks and alcohols (0.92). At the same time, those products that have maintained their position in the hierarchy within the period 2006-2009, although with decreasing values of the indices, were those included in chapters 01 - live animals, 14 - other vegetable products, 10 - cereals, 12 – oil seeds and 16 - meat, while 15 - fats and oils, only until 2007.

The chapter 24 - tobacco and tobacco products, shows a significant start over since 2007, together with the products of chapter 02 - meat, in 2010, although to a lesser extent.

In the year 2010, the indices show the lowest values on the great majority of products, indicating a loss of trade advantage comparing to some valuable segments of Romania's agri-food sector that previously have proved performances.

According to the assessments, products of chapters 01 - live animals and 12 - oilseeds suffered in the year 2010 a dramatic weakening of their external performance. As well,

concerning the products of chapter 04 - milk, dairy products, whose decline has occurred since 2007, their trends indicate a continued loss of external competitiveness.

Conclusions

The topic discussed help expand scientific approaches of assessment the potential, needs and prospects for increasing competitiveness in the agricultural sector.

Romania's foreign agricultural trade had suffered within the past two decades inflections and periods of decline under the interrelated pressures of the internal political and economical reforms, of the adaptation to the EU agricultural and trade policies and integration on the Common Market and in facing the market competition especially of more advanced economies; the changes required by adoption of the CAP have increased the pressure both, on farmers and on food industry in facing market developments.

The results indicate a disadvantage of the Romanian agricultural products, with a decreasing trend of the trade specialization indices.

The evaluations reveal that certain products with previously expressed export potential in the post-accession period, have suffered an important decline in their commercial specialization, such is the case of live animals and animal products, which, although still have positive trade balance, the net export amounts registered significant declines; the results identified similar loss for oilseeds, milk and dairy products.

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Review Article

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ASSUMPTIONS AND POSSIBILITIES OF THE DEVELOPMENT OF THE SERBIAN FOOD INDUSTRY

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Summary

The industrial production of food represents a strong motive of international trade, the development of competitiveness, high-quality products and a sustainable developmental strategy. The food industry has a significant place within Serbia's economy and industry today. The subject of this paper's study is the analysis of the reached levels of the development and competitiveness, limitations and future development of the food industry. The aim of this paper is to highlight the assumptions and possibilities of the development of the food industry in our country, i.e. tasks which it is given in order to achieve the growth of its efficiency and competitiveness. In this paper, appropriate methods of quantitative analysis, qualitative and structural changes are used. The indicators of export competitiveness which are used as indicators are the coverage of import with export and the index of Revealed Comparative Advantages (RCA).

Key words: *food industry, agriculture, export, industrial policy.*

JEL: *L66, Q22, F1, L52*

Introduction

The main characteristic of contemporary nutrition is the industrial production of food, with high standards of the protection of the quality of products. The production of food stuffs has relatively the widest raw material base in agriculture, although the number of industrial groups that use raw materials of agricultural origin has incessantly been increasing (the production of biofuel).

In the developmental concept and production orientation, the division of the food industry increases more and more its activity outside the framework of the traditional

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production of food. Being oriented towards the production of the complete assortment of own raw materials, it connects with other divisions, establishing firmer and more permanent integration ties in the process of reproduction (the vertical and horizontal integrations). The biggest results in this field have been achieved via the development of agro-industrial complexes (agribusiness).

Serbia belongs to the group of countries which have all conditions needed for the achievement of a sufficient scope of food, not only for own needs but surpluses for exporting as well. The social-economic reforms in the second stage of transition and the devastation of the economy's real sector have affected the potential and developmental chances of agriculture and the food industry. Irrespective of the series of limitations and dependence of the trends of primary agricultural production, the share of the food industry in the processing industry has grown in the previous time period.

There is no doubt that, as has been the case so far, products of the agro-industrial complex should have a big and significant role in production. During the year 2011, a series of strategic documents were presented (Post-crisis Model of the Economic Growth and Development of Serbia 2011-2020, Serbia 2020, The Strategy and Policy of the Development of the Republic of Serbia's Industry 2011-202), which accounted for the results and possibilities of the expansion of the food industry in the years to come.

Here, one question clearly arises: what should be done to make the food industry develop efficiently in the next time period? The sustainable growth of this industrial division requires the bringing and efficient implementation of a completely different strategy of the development of industry compared with the existing one, in which the food industry, founded on available resources and agriculture's adequate position, will be treated adequately. The new concept of the (re)industrialization and development of the food industry requires active measures of the industrial policy as well in order to drastically increase the rate of growth of production, export and employment.

Theoretical-methodological bases of the analysis of the food industry

According to the Classification of Activities issued in 2010, which is identical with the NACE Audit 2, ISIC Audit 4 and integrated into SMTK Audit 4, the division of the production of the food stuffs i.e. the food industry encompasses the processing of agricultural, forestry and fishery products in order to generate food for humans or animals, and the production of different inter-stage products is included as well. Classing within this division was carried out according to the types of products in 9 groups and 25 classes[4]. Differently from the classification from 1996, where the production of food stuffs and beverages were one single division, the new classification of the activity treats them separately.

4 Republički zavod za statistiku (2010): *Klasifikacija delatnosti*, Beograd, p. 17-25.

The subject of the analysis is, primarily, the food industry, and its reached level of development and competitiveness, apart from the growth rate, the share in the structure of the GDP and GAV (Gross Added Value), can be assessed on the basis the export and investments, too[5]. The analysis was performed on the basis of data from relevant reports published by the Republican Agency for Statistics of Serbia, and, at the same time, the food industry is observed in a larger number of years. In the paper, appropriate methods of the quantitative analysis are used, as well as those of qualitative and structural changes. The indicators of export competitiveness used as factors are:

The coverage of import with export is calculated as the ratio of the total export and imports, i.e. for an individual, particular product, a class of products, a group and a division. If the degree of the total coverage of import with export is higher than 1, i.e. 100%, the country realizes a positive amount of the foreign-trade balance, and vice versa.

The index of comparative advantages (Revealed Comparative Advantage – RCA) represents the ratio of the foreign-trade balance and the total foreign-trade exchange, expressed in percentage. The positive value of the RCA is indicative of comparative advantages and a surplus in goods exchange, and is calculated as[6]:

$$RCA = \frac{Xij / Xik}{Xnj / Xnk}$$

where Xij – the export of products and the country j, Xnj – the export of all products of the country j, Xik – the export of products and the country k, and Xnk – the export of all products of the country k.

Development and structural changes in the food industry

In the second stage of transition, since the year 2011, and due to the application of an inadequate model of Serbia's economic growth, it was not efficient and successful as in developed countries in transition. It produced a series of economic-developmental risks and structural problems, starting with unemployment, a huge foreign-trade deficit and the external debt, via the dynamic development of the services sector to an extremely poor structure of the economy. The adequate development of the real sector has been neglected. Industry and agriculture have been neglected and devastated, which is accounted for by very low average growth rates of the sectors in the time period prior to the year 2008, i.e. in the time period from 2001 to 2010 (Table 1).

5 Porter, M., E. (2007): *O Konkurenciji,* (1451-7272), FEFA, Beograd, p. 160.

6 Republički zavod za razvoj, *Konkurentnost privrede Srbije 2008* (2009), Beograd, p. 22.

Table 1. Average growth rates

Sector/ Year	2001	2002	2003	2004	2005	2006	2007	2008	2008/01[1)]	2009	2010	2010/01[1)]
Agriculture	18.6	-2.5	-6.7	19.0	-4.9	-0.2	-7.8	9.1	3.1	1.0	-1.7	1.5
Industry	0.1	1.8	-2.8	6.6	0.6	4.2	4.1	1.4	2.0	-12.6	2.5	0.6
Food industry	-2.5	8.7	-2.2	2.8	4.6	2.5	5.7	-0.7	2.4	-5.8	1.4	1.5

Source: Republički zavod za statistiku (2001-2011), Statistički godišnjak Republik Srbije, Nacionalni račun, Beograd.

[1)] Average growth rates 2001-2008 and 2001-2010.

The food industry reached a high average growth rate of 2.4% until 2008, i.e. 1.5% in the time period from 2001 to 2010, having in view the average growth rate of industry. Such a trend was also partly due to the achieved growth level of agriculture as a raw material base.

In the structure of the processing industry, the biggest average share (23%) was that of the food industry division (Table 2). If this is complemented with the beverages production and tobacco products divisions, the three divisions produced one-third of the processing industry section (with the production of chemical products and basic metals around 58%). Thanks to the average growth rate of 1.5%, the production of food stuffs recorded a growth of its share in the year 2010 compared with the year 2001 by 5.9%. This clearly demonstrates the significance and role of this division not only in the processing industry but in economy as well.

Table 2. The structure of the processing industry of the three leading divisions

Sector/Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2010/01[1)]
Processing industry	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Food stuffs production	18.7	20.3	27.9	23.9	22.9	22.5	21.6	22.3	24.5	24.6	22.9
Food stuffs + beverage + tobacco	27.7	29.3	36.9	32.9	31.9	32.8	32.7	32.1	34.8	33.7	32.5
Chemical products production	14.0	14.4	13.9	11.2	12.3	12.9	13.0	13.4	12.6	12.9	13.1
Basic metals and metal products production	10.5	10.7	10.6	9.2	12.7	14.0	13.5	14.0	12.2	10.9	11.8
Other divisions	56.8	54.6	47.6	55.7	52.1	50.6	51.9	50.3	50.7	51.6	52.2

Source: Republički zavod za statistiku (2001-2011), Statistički godišnjak Republike Srbije, Industrija, Beograd.

[1)] Average Share 2001-2010,

The model of economic growth implemented since the year 2001 had an impact on the halving of the contribution of agriculture to the creation of the GAV and the reduction of industry's contribution by one-third, which is inappropriate to the reached level and stage of the development of Serbia's economy. It structure of the economy is not at the level at which traditional production sectors give way to the services sector, whose dynamic development requires a high level of GDP *per capita*, which, in this country of ours, lags a lot behind more developed countries.

Table 3. The structure of GAV of some activities (2001-2009), in constant prices

Sector/Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Agriculture	21,4	17,9	13,3	14,0	12,0	11,0	9,4	10,2	10,6
Processing industry	22,2	22,1	17,5	16,3	16,3	16,8	17,1	16,0	14,2
Food stuffs production	4,5	4,7	4,0	3,9	4,2	3,8	3,9	3,4	3,6
Beverage production	1,4	1,4	1,4	1,1	1,1	1,3	1,2	1,0	1,0
Tobacco products production	0,4	0,7	0,5	0,6	0,4	0,3	0,5	0,3	0,3

Source: Republički zavod za statistiku (2001-2011), Statistički godišnjak Republike Srbije, Nacionalni račun, Beograd.

The fall in the share of the production of food stuffs in GAV (20%) was more moderate to a certain extent. Although the share of the food industry in the structure of GAV and export was high, it recorded a modest contribution to the creation of GAV. Enterprises in this division belong to resource and labor intensive production, with a high share of products of low and medium-low technological intensity. The unsatisfactory share in the creation of GAV lies in the poorly conducted privatization, i.e. the unwillingness on the part of new owners to increase investments in the growth of technological intensity and upgrading the level of product finalization in the post-privatization restructuring, which would have increased the productivity and share of this industrial group in the creation of GAV.

Foreign-trade performances unambiguously account for the great significance of the food stuffs division. The global economic crisis has also affected the export of the food industry, however not to such a great extent as it has been the case with the other parts of economy and industry. Although the export of food stuffs in the year 2010 increased by 3.6 times compared with the year 2002, the share of the export of the food industry in the total export was relatively reduced from 17.8% to 13.5% in the years 2002 and 2010, respectively. Although import was increased by 1.9 times, it reduced the share in the total import. The import growth is partly the result of the needs of exporting enterprises for raw materials, which domestic agriculture and other activities cannot provide (Table 4).

Table 4. Foreign trade – food stuffs (in 000 USD)

Sector/Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	10/02
Total export	2,075	2,755	3,523	4,482	6,428	8,825	10,974	8,344	9,795	4.7[1)]
Total import	5,614	7,473	10,753	10,461	13,172	19,164	24,331	16,056	16,735	3.0[1)]
Export of food stuffs	370	426	613	673	847	1,148	1,355	1,186	1,323	3.6[1)]
Import of food stuffs	287	319	290	304	344	470	587	530	555	1.9[1)]
Food industry export % share in export	17.8	15.5	17.4	15.0	13.2	13.0	12.3	14.2	13.5	14.7[2)]
Food industry import % share in import	5.1	4.3	2.7	2.9	2.6	2.5	2.4	3.3	3.3	3.2[2)]
Coverage of import with export	128.9	133.5	211.6	221.2	246.3	244.3	230.8	223.8	238.4	1.8[2)]
RCA	4.21	3.47	4.23	4.07	3.67	3.47	3.06	3.68	3.59	3.72[2)]

Source: Republički zavod za statistiku (2001-2011), Statistički godišnjak Republike Srbije, Spoljna trgovina, Beograd and Eurostat - External Trade (2012), available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database.

[1)] Relative increase in 2010 compared with 2002; [2)] Average share 2002-2010.

This whole division records the growth of the coverage of import with export, which, since 2002, increased by 80%. The coverage growth is indicative of an improvement in competitiveness in the observed time period; however, first of all, through an increased export of lower processing stage products. This thesis is confirmed by the positive as well as falling and varying values of the RCA. The positive value of RCA is an indicator of comparative advantages in export and a surplus in the visible trade of the given division with EU-27, as the most significant foreign-trade partner of Serbia. The falling and varying tendencies of the RCA indicate that the now competitive position of the food industry in Serbia will worsen in the EU market unless there is an increase in the degree of the finalization and quality of products.

The trend of the reduction of the number of employees in the processing industry section did not bypass the food industry either (Table 5). The poorly conducted privatization, the restructuring of enterprises and consequences of the global economic crisis had an impact on the reduction of the number of employees in the processing industry by 318 thousand and 28 thousand workers in the food industry in the time period 2001-2010. Because of a relatively more modest decrease in the number of the employed in the food industry compared with the processing industry, this division increased its share in the total number of the employed in the processing industry from 13.6% to 18.6% in the years 2001 and 2010, respectively.

Table 5. Employment in the food industry

Sector/Year	2001	2005	2007	2008	2009	2010	2010/01[1)]
Processing industry	619,112	459,950	391,897	360,036	329,491	301,452	-317,660
Food industry	84,242	82,045	75,936	66,832	67,451	56,057	-28,185
Food industry, %	13.6	17.8	19.4	18.6	18.8	18.6	17.8[2)]

Source: Republički zavod za statistiku (2001-2011), Statistički godišnjak Republike Srbije, Tržište rada, Beograd.

[1)] Absolute reduction 2010 compared with 2001; [2)] Average share 2001-2010.

The significance of the production of food stuffs for employment is obvious. With the average share of almost 18%, this division had the biggest share in the structure of the total number of employees in the processing industry (with the production of beverage and tobacco 22.4%). It is only followed by the production of metal products with 10.3% whereas the other divisions account for significantly below 10% in the structure of the employed in the processing industry[7].

According to the number, in the food industry, micro enterprises (75.3%) are predominant, while the share of large enterprises in the total number of enterprises is no more than just 1.8%. It is completely contrary when the total number of employees is observed, since the majority of the employed work in large (40.3%) and middle enterprises (34.6%) (Table 6).

Table 6. The number of enterprises and employees in food industry (in 2009)

The number of enterprises according to the size				
Total	Micro	Small	Middle	Large
3,302	2,263	474	212	53
100.0%	75.3	15.8	7.1	1.8
The number of the employed according to the size of the enterprise				
67,451	6,287	10,607	23,353	27,204
100.0%	9.3	15.7	34.6	40.3

Source: Republički zavod za statistiku, (2011), Statistički godišnjak Republike Srbije 2011, Strukturne poslovne statistike, Beograd, p. 191.

The food industry enterprises record a growth of work productivity of averagely around 10% in the time period 2004-2009[8], which is significantly higher than the growth rates of production of 1.5% in the same time period. The growth of productivity is primarily the result of the reduction in the number of employees whereas the impact of technological modernization, an increase in the efficiency of using production factors, i.e. investments in new technological processes, innovations of products and employees' expertise was minimal, which is by no means sustainable over the long term.

As far as privatization is concerned, conclusive of the year 2010, 202 enterprises were privatized in the division of the production of food stuffs, the production of beverages and tobacco products, whereas 48 privatizations were annulled or almost 22%. In the time period to come, the restructuring of 3 enterprises should be brought to an end and, on tender or auctions, the remaining 12 enterprises with the social capital should be privatized[9].

Within the economy's total investments, the divisions of the production of food stuffs and beverages account for averagely 5.5% in the time period 2005-2009 (Table 7). In

7 Republički zavod za statistiku (2011): *Statistički godišnjak Republike Srbije 2011*, Strukturne poslovne statistike, Beograd, p. 191.

8 Republički zavod za statistiku (2004-2009), *Industrija Republike Srbije,* Beograd.

9 Ministarstvo ekonomije i regionalnog razvoja i Republički zavod za razvoj (2011): *Strategija i politika razvoja industrije Srbije 2011-2020*, Beograd, p. 151.

the processing industry section, the major share of investments of averagely 31.9% accounted for these two divisions, while the share of the production of food stuffs only was 26.5%. The biggest investments were made in the production of oil, milk, confectionery products and water. Smaller investments were made in the production of meat, sugar, fruit and vegetables[10].

Table 7. Investments in the divisions of food stuffs and beverages production (2005-2009)

2005	2006	2007	2008	2009	2005-2009[1)]
Share compared with Economy					
3.6	7.2	5.5	5.4	5.6	5.5
Share compared with the processing industry					
37.7	36.4	28.5	27.3	29.5	31.9
Technical structure of investments in fixed assets – average 2005/09					
Construction works		Equipment		Other	
25.8		71.7		2.5	
Realized investments according to the construction characteristics in the fixed assets – average 2005/09					
New capacities		Reconstruction		Maintenance	
40.2		46.6		13.2	
Payouts for investments in the fixed assets, sources of financing – average 2005/09					
Own funds	Joint funds		Financial loans		Other
83.4	1.7		14.3		0.5

Source: Republički zavod za statistiku (2001-2011), Statistički godišnjak Republike Srbije, Investicije i Nacionalni račun, Beograd.
[1)] Average share 2005-2009.

In the division of the production of food stuffs and beverages, the biggest portion of investments (on average 69.9%) were made in equipment, one-fourth in buildings. According to the construction characteristics, averagely 46.6% of investments were made in the reconstruction of the existing capacities, 40.2% in new capacities and maintenance accounted for 13.2% of the total investment funds. The biggest portion of investments originated from own funds (83.4% on average) whereas financial funds accounted for 14.3% of the total investments. Share of joint assets of 1.7% and other sources of 0.5% is very modest.

The divisions of the production of food stuffs and beverages generated an inflow of around 800 million EUR of FDI's in the time period 2004-2010. This amount makes around 28% of the FDI's of the processing industry or around 6% of the total FDI's[11].

10 Ministarstvo poljoprivrede, šumarstva i vodoprivrede Republike Srbije (2009): *Nacionalna strategija ruralnog razvoja 2010-2013*, Beograd, p. 8-9.

11 Narodna Banka Srbije, (različite godine izdanja), *SDI po granama delatnosti,* Beograd, available at: http://www.nbs.rs/export/sites/default/internet/latinica/80/ino_ekonomski_odnosi/platni_bilans/fdi_neto_2005_2010.xls

The limitations of the development of the food industry

The so-far development of the food industry in Serbia has been marked by the disharmony in the pace of the building of processing capacities and the adequate development of the raw-material base. That has had as a consequence the inadequate location and capacity surpluses from time to time[12]. The deployment of processing factories has not sufficiently been complied with the regional deployment of raw materials. Also, some divisions have lost the substantial processing capacities of the food industry, although they have the raw-material base needed for its development at their disposal. Some large enterprises and agro-industrial complexes have collapsed (Servo Mihalj Zrenjanin). Privatization has aggravated this situation.

Available data also demonstrate a low degree of the exploitation of the capacities of the food industry, ranging from 30 to 50%. The capacities of oil factories, mills, fruit and vegetables processing, confectionery products production, dairies and sugar factories are exploited the most, and the capacities for the processing of stock-cattle feed and slaughterhouses are exploited the least[13]. The low degree of the exploitation of the capacities of this division is partly the result of over-sized and obsolete processing technology, for which reason they are less efficient as well. A relatively higher exploitation degree in certain groups is, for the most part, the result of more favorable demand in the domestic market and the market of the CEFTA Agreement and EU countries. Those enterprises from within this division which have successfully conducted privatization and restructuring or have attracted strategic partners and FDI's (Imlek Belegrade, Viktoriaoil Sid, Dijamant Zrenjanin, Sojaprotein Becej, Matijević Novi Sad, Grand Prom Belegrade), have provided themselves with up-to-date equipment and technological processes, management, professional personnel and marketing, which enables them to reach a higher degree of the capacity exploitation, realize significant trading in the domestic market and have solid export onto foreign markets. The most important strategic capacities, such as the production of milk or sugar, have, for the most part, become owned by foreign enterprises and investment funds.-

The more or less expressed domination of a smaller number of producers in the groups of the food industry has an unfavorable impact on the trend of prices and the consumption of agricultural products and food stuffs as well as the efficiency and stability of production. The inadequate privatization has enabled certain food-stuff producers and traders in food to become dominant, for which reason some products' prices are formed through prohibited cartel agreements. Prohibited agreements producer of bread and milk have been proven. Cartels have also become more visible in the production of oil, sugar, confectionery products, when prices and production capacities in Serbia and neighbor countries are compared with each other. A problem also arises

12 Ilić, M., Vujčić, M., Mićić, V. (2006): *Mala i srednja preduzeća prehrambene industrije i preduzetništvo u funkciji razvoja seoskih područja*, Ekonomski horizonti, Ekonomski fakultet Kragujevac, godina VIII, (1-2/2006), p. 89-105, Kragujevac.

13 Ministarstvo poljoprivrede, šumarstva i vodoprivrede Republike Srbije (2009): *Nacionalna strategija ruralnog razvoja 2010-2013*, Beograd, p. 8-9.

in export because of the existence of a large number of intermediaries. Consumers and agricultural producers are those to cope with consequences and pay a heavy toll of the closed market and inefficient protection of competition.

Frequent disturbances in the agricultural products market, the question of the volume of production and (purchase) prices determine the conditions of the business doing of the food industry. Its production and export in this country of ours depend to a great extent on the impact of the weather conditions on agriculture, so, comparative advantages of these products are easily lost. Another problem is an uneven inflow of agricultural raw materials, the seasonality of the activities of this division, whereas their quality affects the amount of costs. Yet another limitation lies in the non-existence of long-term contractual relations between the food industry enterprises and raw material producers.

In the past, and today as well, apart from the natural potential and favorable conditions, agriculture has not been able to meet all the population's needs for food and the food industry's needs for raw materials, so certain groups base their production on import. Agriculture is characterized by an extensive structure of production, the domination of the production of grains and industrial plants, poor irrigation (less than 5% of arable land) and a great fall in the number of cattle heads. The share of cattle production in the production structure indicates a degree of the development of the agricultural production of a country. In the structure of the gross generated value, the share of plat production in Serbia is around 59%, and cattle production has an only 41% share, with a tendency of becoming worse. In the EU, around 70% of the value is derived from cattle production, and 30% from plant production[14].

Although the production of industrially prepared food is growing, still 50% of primary agricultural products are extensively processed within individual agricultural holdings or are exported in the primary form. That is not the case in countries whose food industries and agriculture are developed – their processing exceeds 85% of primary production (Holland 96%, Belgium 90%, France 87%)[15].

Apart from the fluctuations in the quality of food stuffs, either for the reason of missing food production standards or paying no respect for and poor control over the existing ones, the narrow and insufficient assortment of products in comparison with modern offer and demand is a special limitation for the food industry's greater export onto neighbor markets and the EU market. In Serbia, the processing of raw materials of plant origin, i.e. the processing of vegetables and fruit, the production of edible oil and oil products, confectionery products, flour and flour and sugar products, is a predominant one. The

14 Maletić, R., Ceranić, S. (2011): *Regionalni razmeštaj osnovnih proizvodnih kapaciteta poljoprivredne Srbije*, Ekonomika poljoprivrede, Naučno društvo agrarnih ekonomista Balkana, Beograd, Institut za ekonomiku poljoprivrede, Beograd, Akademija ekonomskih nauka, Bukurešt, vol 58, (SB-2), 3-189, Beograd, p. 157.

15 Ilić, M., Vujčić, M., Mićić, V. (2006): *Mala i srednja preduzeća prehrambene industrije i preduzetništvo u funkciji razvoja seoskih područja*, Ekonomski horizonti, Ekonomski fakultet Kragujevac, godina VIII, (1-2/2006), p. 89-105, Kragujevac.

processing of raw materials of animal origin, i.e. the production of milk and dairy products, meat and meat products, is less present[16].

The development of the food industry in the next time period

The food industry must have a priority in the concept of the development of the economy over the medium term because it possesses comparative advantages which should fully be exploited to provide conditions for the improvement of food production, processing and export, which is increasingly becoming a strategic product worldwide. Chances for a more significant increase in exporting activities are more significant having in view an explicit tendency of the food price rise at the global level, especially since the year 2008, when it reached the highest average value[17]. Agricultural products are Serbia's realistic chance to export but only if the degree of the processing of agricultural products and food stuffs rapidly lift, because only their export can enable a higher level of the added value. For this to really see the light of day, beside the efficient development of agriculture, it is necessary that modern capacities of the processing industry, whose products would even satisfy the strictest requirements imposed by the contemporary world market, should be built.

In order to use up the existing comparative advantages better, it is necessary that bigger domestic investments and the inflow of FDI's in the development of both agriculture and the food industry should be enabled. Bigger investments in the change of the structure and quality of production and adequate institutional frameworks would create a raw-material base in agriculture and a higher degree of production connectivity, i.e. the horizontal and vertical integrations with the food industry, especially the development of large enterprises and agribusiness. Apart from the economy of scale and competitiveness, large enterprises are necessary in order to fulfill the requirements and standards of quality, product safety and the protection of the living environment. By strengthening these forms of integration, more favorable conditions for the development of the production of grains, vegetables, fruit and cattle breeding, especially industrial plants for bigger production of biofuel and bioenergy would be created. Programs of building small and middle food capacities business-connected with bigger production systems, especially in undeveloped rural areas, are an extraordinary opportunity for production diversification based on organic production, i.e. "healthy food" and "green technologies" with a nationally recognizable origin.

Any enterprise has a task to adapt to the requirements of the markets they are exporting to. The greater exporting activities of the food industry will depend on the quality and assortment of offered products. There are high reserves in the production of organic and health friendly secure food of a high quality, which the foreign market is very much interested in. That requires: (1) the introduction of the ISO Standards 14000, 22000

16 Republički zavod za statistiku (2004-2009), *Industrija Republike Srbije,* Beograd.

17 Milanović, M., Ljubić, M., Muminović, S. (2011): *Uticaj cena hrane na ciljanu inflaciju u Republici Srbiji,* Ekonomika poljoprivrede, Naučno društvo agrarnih ekonomista Balkana, Beograd, Institut za ekonomiku poljoprivrede, Beograd, Akademija ekonomskih nauka, Bukurešt, vol. 58, (br 4), 529-804, Beograd, p. 550.

and HACCP Quality System, and also religious standards Halal and Kosher; (2) the compliance of production processes with the good production practice, and (3) education, the establishment and incessant monitoring of the EU directives related to agricultural products and food stuffs, and complying them with ours.

Via research-developmental centers, change in the structure of demand in the world market and the EU market, the degree of the satisfaction of needs through own production will require monitoring in certain countries, and our offer will have to comply with the structure of their demand. Enterprises must broaden the assortment of food production on the basis of the existing primary products and secondary raw materials. They must quickly adapt to new market conditions and business criteria, via the introduction of contemporary management and marketing.

The CEFTA Agreement market and Slovenia EU member country, Croatia will join EU starting 2013, offer a chance for increasing the exploitation of the capacities above 80%. Simultaneously, these markets are a test of our competitiveness compared with food producers coming from EU. Free trade agreements (Belarus, Russia and Turkey) are widening the market, which we must be aware of when making a concept of and implementing the strategy and policy of the development of the food industry.

In strategic documents during the year 2011, agriculture and the food industry were among the prioritized sections of the post-crisis development model until the year 2020. After decades of searching for the path, the industrial policy has definitively been given the place it deserves. In contemporary development, it is no longer possible to manage economy and channel processes of changes in the structure of industry without an adequate industrial policy. Unfortunately, not all available world experiences and those at our disposal have been used in making the concept of it[18]. Its implementation must include the development of agriculture. As such, it must be active, with defined goals, instruments, institutions and funds.

The encouragement of the development of the food industry over the short term must be conducted selectively, by means of subsidies, favorable loans and operative measures of the protection of competition, towards those products which, in the shortest possible time period, will increase production and export. Over the medium term and long term, the establishment of a development bank, as well as taking horizontal measures, must be in function of increasing efficiency, production specialization and the improvement of competitiveness. All measures must be in compliance with the rules imposed by the World Trade Organization[19].

18 Savić, LJ. (2011): *Uticaj svetske ekonomske krize na razvoj srpske industrije*, Industrija, Ekonomski institut, Godina XXXIX, (4/2011), p. 87-105, Beograd.

19 Savić, Lj. (2010): *Export-oriented Industrialization as the Base of the New Model of Development*, Economic Themes, Faculty of Economics Nis, XLVIII, (2/2010), p. 315-330, Nis.

Conclusion

In spite of limitations and the economic crisis, the division of the production of food stuffs represents a significant segment of the industrial structure and an important factor of the stability of overall economic and social trends in Serbia. For that reason, the question of the possibility of the restructuring of this division emerges as a strategic one in order to make its comparative advantages and potentials better exploited. The development of processing capacities would have a positive impact on the development of primary agricultural production, change of its structure, higher product finalization and an improved quality of the population's intake of food. In that way, a serious chance for the development of the whole of the agro-industrial complex would emerge.

In its future development, the food industry and agriculture must not confront with each other but, on the complementary developmental and comparative advantages of both of them, an adequate development strategy should be conducted, given that our economy is still far away from the structure where traditional production sections make room for the service section.

The food industry can become an even more significant exporter. Export, especially onto the EU market, requires that the domestic regulations in the production and control of food should adapt to the requirements for and standards of quality of this market. Apart from quality enhancement, it is necessary that the structure of the export of food should adapt to the requirements of the import demand of other markets, the volume of production of certain classes increase (the growth of cattle breeding, and the processing of raw materials of animal origin), and the technological modernization and innovativeness of this division improve. Apart from the competitive price, our big export chance, and also a danger for global stability, arises from a huge rise in prices for food stuffs. In that sense, apart from export, the food industry determines the food security and social stability of the country, too.

The food industry must be the focal point of the industrial policy, with an aim to make productivity, efficiency, specialization and competitiveness grow. Depending on the extent to which this will be realized, our food industry can really become a leader in the production of food and food processing in this part of Europe.

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PRETPOSTAVKE I MOGUĆNOSTI RAZVOJA PREHRAMBENE INDUSTRIJE SRBIJE

Ljubodrag Savić[20], Gorica Bošković[21], Vladimir Mićić[22]

Rezime

Procesi industrijalizacije, urbanizacije, globalizacije, rast svetske populacije i cena hrane, uslovili su brz razvoj prehrambene industrije. Industrijska proizvodnja hrane predstavlja snažan motiv međunarodne trgovine, razvoja konkurentnosti, visokog kvaliteta proizvoda i održive razvojne strategije. Prehrambena industrija u sklopu privrede i industrije Srbije danas ima značajno mesto. Predmet istraživanja u radu je analiza dostignuti nivo razvoja i konkurentnosti, ograničenja i budućeg razvoja prehrambene industrije. Cilj rada je da ukaže koje su pretpostavke i mogućnosti razvoja prehrambene industrije kod nas, odnosno koji su to zadaci koji se pred nju postavljaju kako bi se ostvario rast njene efikasnosti i konkurentnosti. U radu se koriste odgovarajući metodi kvantitativne analize, kvalitativnih i strukturnih promena. Indikatori izvozne konkurentnosti koji se koriste kao pokazatelji su pokrivenost uvoza izvozom i indeks komparativnih prednosti (RCA).

Ključne reči: *prehrambena industrija, poljoprivreda, izvoz, industrijska politika.*

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THE ROLE OF THE MARKETING MIX IN THE IMPROVEMENT OF AGRICULTURAL INSURANCE

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Summary

Specialization of agricultural production is closely associated with increased risk. Insurance is often used as a method of transferring risk from a farmer to an insurance company. The development of modern agriculture requires widening the scope of insurance coverage. Therefore, the paper analyzes the possibility of adjusting insurance offers to the specific needs in agriculture sector with the aim of increasing the number of insured business entities. First, it is necessary to properly define the marketing mix in agricultural insurance. Second, it is equally important to permanently measure effectiveness and legitimacy of its application. Importance of the most commonly used indicator - the Return on Marketing Investment Coefficient (ROMI), is underlined.

Key words: *agribusiness, agricultural insurance, marketing mix, marketing metrics.*

JEL: *Q10, G22, M31.*

Introduction: the complexity of risk in agriculture and insurance schemes

Agricultural business, faced with multiple unforeseeable circumstances, has always drawn attention in the context of finding the ways of adequate risk management. However, the classification of risks in agricultural production has a wider scope. Agriculture is exposed to numerous types of risks, which, combined, influence the effectiveness of agricultural production (Pejanović, 2006). Any negative change in the achievable results, whose certainty of occurrence cannot be foreseen, can be considered a risk. In general, the risks present in agricultural production can be classified as financial risks and business risks (Hardaker et al., 1997). Business risk includes production, market, institutional and personal risks, whereas

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financial risks result from different methods of financing (Table 1). The wider scope of risk that farmers are exposed to usually involves the so called institutional risk which results from changes in regulations, standards, and agricultural policy as well. However, farmers do not have significant influence on the institutional risk.

Table 1. Risk and Agricultural Insurance

Types of risk	Internal methods of insurance	Insurance outside an agricultural holding
Production risk	Diversification and technological innovation of production.	The classic insurance (property, crops, fruits, animals, against multiple types of risks etc.) and weather derivatives.
Market risk	Diversification, vertical coordination, marketing and production contracts, cooperatives and vertical integration.	Commodity derivatives (eg. agricultural futures and options on futures)
Personal risk	Application of safety standards, systematic control of health of household members and staff.	Insurance for persons (against accident, life insurance, insurance against a number of diseases, etc.).
Financial risk	Diversification, planning and significant funding from private sources.	Financial derivatives (interest rate and currency swaps).

Source: research by authors.

Why classification of risks and insurance schemes are important? Producers should be aware of all types of risks and the impacts they have on the efficiency and effectiveness of agricultural production. Consequently, they are highly motivated to use certain methods to overcome those impacts. Yet, producers will first opt for internal methods for overcoming risks and use external methods only if certain conditions are met. Furthermore, an aggravating circumstance is the fact that different types of inter-dependant risks can occur simultaneously and have multiple impacts on the success on agricultural production.

Due to the specifics mentioned, the text below focuses on analyzing access to insurance against production risk in agribusiness. Given the importance of the modern concept of insurance against risks in agriculture, the paper raises the following questions: *Who are the insured persons/business entities in agricultural insurance and how systematically different they are? Whether priority in stimulating an increase in the scope of agricultural insurance should be given to external (push) factors or the most important factors can be still found within the system of integral connections and relations between modern agriculture and services (insurance is viewed as one of the extra-agricultural services within agribusiness)? How can the attitude towards agricultural insurance be innovated?* The significance of the work is reflected in clarifying marketing tools and methods that are used in agricultural insurance with the aim of a wider involvement of farmers/business entities.

Methodological clarifications: structural characteristics of agriculture sector and the factors of agricultural insurance

Agricultural insurance, in the broadest terms, refers to the insurance of crops (crop insurance) and insurance of livestock, and represents a method of risk transfer from a farmer to an insurance company. More specifically, agricultural insurance reduces the risk for producers and stabilizes their incomes, through indemnities. There are different approaches: the so-called all risk insurance, multi-peril insurance, catastrophe risk insurance, etc. Practice shows that even in the most developed economies, agricultural insurance is applied with many difficulties (Miranda and Vedenov, 2001). In terms of methodology, the obstacles to implementing insurance in agriculture can be found in systematic differences between the various factors comprising modern agriculture sector, as well as in the lack of understanding of how farmers/business entities make a decision on using an insurance scheme.

There are two parallel models how agricultural sector operates (Table 2): *family farm model* and *agribusiness model* (Strange, 1988). In relation to the family model of agriculture, it should be stated that it has never and nowhere existed in an ideal form (Vogeler, 1985; Galeski and Wilkening, 1987). In fact, the model indicates only a tendency, based on confronting philosophies of the "big" and "small" in the agricultural sector, to maintain a certain degree of balance between agents in terms of their interests within the complex agricultural system by consciously directing government policies.

Table 2. Models of organizational structure in modern agribusiness

Family farming	Agribusiness
Operates on the basis of ownership	Organized on industrial scale
Venture aimed	Financed with the aim to grow
Dispersed as "small"	Concentrated as "big"
Diversified production	Aimed at specialization
Family based	Based on management
Technologically progressive	Capital intensive
Competitive advantage in open markets	Powerful at controlling the market
Environmentally friendly oriented	Standardized production processes
Aimed at resource conservation	Aimed at resource spending
Farming is both a business and lifestyle	Faming is exclusively a business

Source: Zakić Z., Stojanovic Ž. (2008): *Ekonomika agrara,* CID, Faculty of Economics Belgrade, p. 45.

The "Farm model" of agriculture (family farming) involves at least two approaches. One of them favors the "entrepreneurial farmers", and the other the "socially oriented farmers" who are, in a positive sense, identified with the so-called rural world (Zakić and Stojanović, 2008). The main characteristics of these two types of family agriculture are shown in Table 3.

Table 3. The characteristics of the family farm model

Traditionally oriented farmers	Entrepreneurial farmers
Usually a smaller farm, expand with caution	Extremely big farm
Cautious about getting a loan	Borrow huge amounts of capital
Greater stability during crisis	Risk of over indebtedness
Prefer owning to leasing land	Owning and leasing land equal
Diversified production	Specialized production
Less susceptibility to market disturbances	High susceptibility to market disturbances
Continual identity of family on the farm	Farm is not a permanent family base
Cooperation between members of household	Competitiveness between househ. members
Preserving the farm for one heir	The prospectus heir is self made
High communal loyalty and environmentally friendly behaviour	Lower level of loyalty to the community and profit oriented behaviour

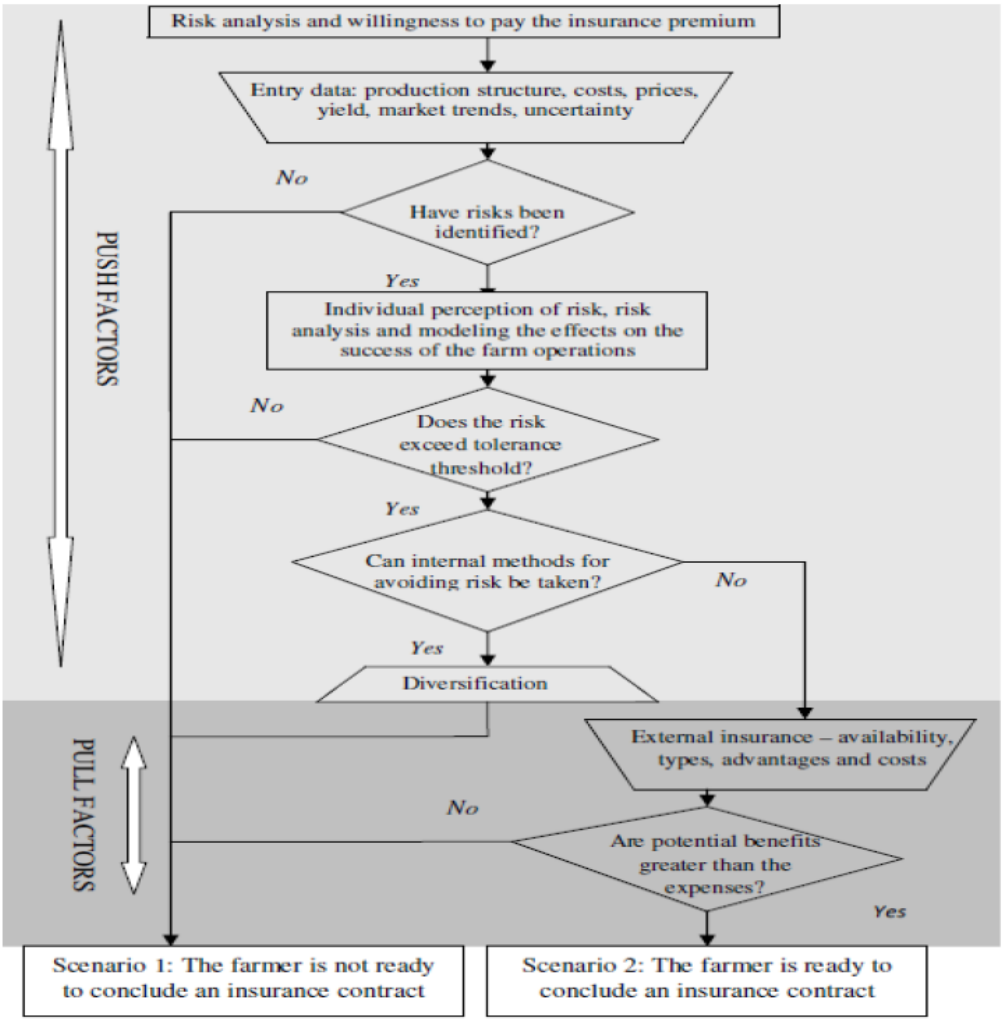
Source: Zakić Z., Stojanović Ž. (2008): *Ekonomika agrara*, CID, Faculty of Economics Belgrade, p. 46.

Based on characteristics of the agricultural entities, we can clearly notice the distinguishing differences. The entrepreneurial farmers are more open to the choice of technology-intensive and specialized forms of production. As such, this production is more imposed to the impacts of risk, and the producers are therefore more willing to participate in the insurance scheme. A study conducted in France suggested large, specialized and exposed to highest risk farms as a typical insured client in the agribusiness sector (Enjolras, Sentis, 2011). However, within the bipolar system of family farming, the entrepreneurial-oriented producers have similar characteristics to agribusiness firms. The more developed the economy, the more significant the participation of the agribusiness and the entrepreneurial-oriented farmers within the agriculture system. However, even in these conditions, farmers make the decision to take insurance against risk by using a complex model of decision making, which involves recognizing the impacts of risk and comparing different insurance schemes.

Criticizing the models that use a general approach when dealing with insurance for farmers, treating them same as any other insurance clients, *Myers* explained how unrealistic this approach is and its irrelevance for insurance in agriculture (Myers 1989). Farmers should be seen as producers, making a decision on whether or not to conclude an insurance contract. It is pointed out that the modern farmer (regardless of the level of their aversion to risk) is willing to pay the insurance premium, which provides an increase in current consumption by lowering the production costs. Thus, the algorithm of farmers' decision making includes two phases - one influenced by the push factors and the other controlled by the pull factors (Figure 1).

The *push factors* are different influences that come outside agriculture and individual entities, which are related to the application of various stimulating measures of agricultural policy such as subsidizing access to insurance. In contrast to these factors, insurance companies are trying to attract customers with a relevant range of products (the *pull factors*). In the process of "pushing" and "pulling" the motives of farmers and reasons for their behavior remain insufficiently explored.

Figure 1. The algorithm of how farmers make a decision on concluding an insurance contract



Source: research by authors.

Starting from the macroeconomic point of view, measures that are applied in the field of agricultural insurance are a significant component of agricultural policy. The main objective of this policy is to ensure sufficient amounts of food of adequate quality (food security and safety). Due to the fact that food in modern agriculture is produced with lower labor involvement (the share of agricultural population decreases with the economic development), the application of new technologies and more efficient, specialized production becomes inevitable. Therefore, diversification, as a traditionally applied method of insurance in agriculture, is regarded as a major obstacle in achieving the national goals of agricultural policy. For example, in the earlier theory of insurance in agriculture, subsidies from the agricultural budget were considered as an inevitable cost of modernization of agriculture (Ahsan et al, 1982).

Although developed countries have been implementing national crop insurance programs as a push factor (for example, in the USA *the Crop Insurance Program* have been implemented since early 1980s), these have suffered considerable criticism. More precisely, they do not contribute to greater market orientation of agricultural production (Nelson and Loehman, 1987; Goodwin, 2001; O'Donoghue et al, 2007). Some authors argue if lower cost alternatives are available, crop insurance is likely a suboptimal strategy (Glauberd, 2004). Due to insufficient financial capability of farms it might be particularly true for developing countries.

Taking into account all the aforementioned specifics of agriculture, the paper analyzes the so called pull factors that can essentially assist popularization of insurance. As an important institution of the economic system, insurance should facilitate both efficient and effective functioning of agriculture. A very important pull factor that may help in spreading the use of insurance in agriculture sector is the adequate use of modern marketing methods in business operations of insurance companies which are, among other, focused on agriculture as well (Milanović-Golubović, 2006).

Marketing mix and modern marketing metrics in agricultural insurance

Agricultural insurance needs more precise marketing programs and techniques, which require identification of individual needs of farmers and a dialogue with smaller groups of the insured persons/business entities. Insurers should make an extra effort to retain the existing clients, by developing a long term business relationship with them, as well as to gain new insured farmers. In that context, insurers should pay special attention to marketing mix, which in insurance business comprises the following: insurance products, insurance premiums, distribution channels and promotion.

An insurer starts its activity in the form of an insurance product, and an insured person/ business entity is protected against the event of various types of risk. If a risk is to be insured, it is necessary that it meets certain conditions: 1) likeliness to occur, 2) uncertainty of the event, 3) economic peril of the event, 4) independence of the event on the will of the insured or other interested person, 5) distribution of the event in space and time, 6) the event must be repeated, 7) exposure to risk must be homogenous, 8) the event must be permissible by public order and morality (Kočović et al., 2010). It is important that insurers identify insurable risks in the system of agricultural production and provide adequate insurance coverage.

In order to draw up insurance contracts to be offered to various types of farmers and agribusiness companies, it is necessary to distinguish the types of farmers willing to pay insurance premiums according to the characteristics of the inputs/technologies used, the results/outputs and their willingness to take risks. It is necessary to define a number of insurance lines to be offered to the companies in agribusiness, and include the following: a) all the risks for a farmer or farm that can be insured, b) the most characteristic risks and c) individual risks. The crop insurance usually covers the following: cereals, industrial crops, orchards and vineyards, vegetables, ornamental plants etc. (Labudović-Stanković,

Todorović, 2011). It is possible to insure parts of a plant that determine the purpose of its cultivation: grain (seeds), roots, fruit, etc. In cereals, for example, besides grains (seeds), it is also possible to insure the stem, and with fruit, for example, trees, vines, etc. Insurance is provided for annual and perennial crops, major crops, secondary crops, stubble crops. The loss of yield (fruit) or loss of yield quality, as a result of damage to or destruction of an insurance subject matter may be insured against general risks (such as hail, fire and lightning) and additional risks (floods, storms, spring frost, etc.). If all insurable risks are covered, it is possible to offer better insurance terms and conditions. The amount of insurance for crops and fruits is usually defined by the insured. This amount is defined based on the actual value of the expected yield of crops (including the expected return and market price, which is formed at the time of harvest). Crop insurance can also be arranged for guaranteed, or contracted prices for certain types of crops. However, contemporary farming is faced with numerous risks and any combination that forms multi peril insurance could be highly relevant in farmers' decision making.

Preventive measures, aiming on control of the causes that could possibly influence on crops and fruits, etc., should be especially stimulated. Investments supported by subsidized interest rates for restructuring farms have been aimed at increasing the technical capacity of modern agriculture - irrigation, protection from hail, etc., and can contribute to the achievement of this goal. The main incentive in these measures is reflected in lower insurance premiums in agricultural insurance. These kind of measures are a good example of interplay between push and pull factors that can positively influence agricultural insurance in practice.

Insurance price - the premium, is the most sensitive element of the marketing mix. Higher premiums discourage demand for insurance products and, even if these result in a satisfactory profit during the calendar year, they may jet limit the insurer's growth and cause a reduction in its market share. This is particularly relevant for agricultural insurance, because farmers belong to the insured persons/business entities that are very sensitive to these changes (Sherick et al., 2003.). On the other hand, low premiums enable growth, but threaten the profitability of an insurance company, and its survival in the market. Therefore, it is necessary to determine the premium that enables profitability, growth, and development. The main factors affecting the amount of insurance premiums in agriculture are: costs, demand, competition and economic measures of the state in the field of agricultural policy. Knowing the characteristics and intensity of impact of these factors, enables the insurer to determine the pricing policy for its products. Of all the above factors, the insurers can influence the level of certain costs most, including: the costs of the conclusion of an insurance contract, and administrative expenses (Kočović et al, 2010). In insurance, resources are pooled, and based on premium payments, are accumulated in the insurance fund and used to compensate the insured. If risk is spread over a greater number of insured, the insurance premium can be determined at a lower level. If a larger number of farmers are covered by insurance, this would certainly result in lowering the premium amount to the level satisfactory both for the insurers and the insured.

Distribution channels should provide contact between the farmers and the insurers and effective solutions to the issues that arise in their cooperation. Insurance can be sold directly to farmers through sales staff, branch network and direct marketing, and it is possible to use

various intermediaries (brokers, agents, etc.). Distribution channels length and width depend on the size of the company and its organization, market size and the scope of insurance. Also, we should always bear in mind that the approach to farmers is specific. In all systems these subjects are often regarded as traditionally - not open for any kind of innovation, including the application of modern methods of agricultural insurance. Therefore, this matter requires a specific method of communication, i.e. communicating the messages to end users (the insured). Commonly, the insurers use complementary channels which are normally used to communicate information to farmers about the technological and other innovations that can improve their business systems. It seems essentially important for national food security.

The tasks of marketing communications in insurance are: 1) forming a positive image of the company, its market and social missions, 2) information about the company's marketing offer and creating clients affection toward its products 3) turning this affection into concrete sales and 4) development of long-term business relationship between the insured and the actual insurance company (Vračar, 1991). Promotion, as a marketing mix instrument, must be effective in bringing the characteristics of insurance products to the insured persons/ business entities. Promotion can provide better insight for farmers into the characteristics of agriculture insurance, and promote more significant participation of farmers as the insured within this system. The information should be incorporated into a functional system that uses print, radio and television, public institutions' publications, specialized industry associations, affiliations, websites and other forms of modern communication media (Gligorijević, 2012).

Investing in the marketing mix and marketing activities in general makes sense only if the investment is cost-effective (Kotler, Keller, 2009). Insurance marketing in general, and in the agricultural sector as well, applies a complex marketing metric today.

In the early stages of the implementation of marketing metrics, insurance companies track the number of agricultural insurance contracts concluded (for insurance products, region, market and sales channels), test and explore the market, then monitor the effectiveness of campaigns and marketing programs and assess return on investment (Farris et al., 2010). In the developed insurance markets, they consider optimal allocation of resources and asset value of the insurance company. Best results are achieved if the insurance company integrates the above measurements on the short-term and long-term levels, where the objectives are measured quantitatively and qualitatively. It is desirable that the metrics is part of the planning process and presented daily, at all management levels in the insurance companies engaged in agricultural insurance. The basic indicator of the results of marketing activities is return on marketing investments. Return on Marketing Investment (*ROMI coefficient*) is the additional revenue realized by applying a marketing campaign minus the costs required by the marketing methods applied.

The main objective of ROMI coefficients is to determine whether marketing activities are justified. The ROMI coefficient has not been used long for checking the effectiveness of marketing activities in insurance, particularly in insuring agricultural production. More

intensive analysis by using the ROMI coefficients started with the work of Lilien G., Kotler P., Moorthy K.S. (1992) in their book *Marketing Models*. A large contribution to the implementation of this coefficient can also be attributed to the work of Shaw R., Mazur L. (1997) *Marketing Accountability*. A number of books that address this issue were published recently, among which the most prominent are a book by Powell G. *Return on Marketing Investment* (Powell, 2003) and a book by Lenskold J. *Marketing ROI* (Lenskold, 2003).

It is extremely difficult to perform an accurate assessment of the effects of marketing activities on the results of operations of the insurers who are engaged in agricultural insurance. There are two forms of ROMI coefficients. The short-term ROMI coefficient measures current income and expenses, i.e. an increase in revenue compared to the investment in marketing activities. If the result is greater than zero, the marketing activity is considered reasonable in the short term. The long-term form involves improvements in the long run. Benefit is in the form of expanding a favorable image of the brand, including customers in the long run and so on. Best results are obtained if both the short-term and long-term forms of ROMI coefficients are used (McGovern and Quelch, 2007).

It is essential that the financial metrics related to profit, sales, cash flow, is supplemented by non-financial indicators such as market share, quality of products and services, customer satisfaction, customer loyalty, brand value etc. It is very important to choose the right metrics that will indicate the existence of an optimal allocation of resources to be used in the marketing of insurance companies.

Ultimately, marketing costs are justified if there is a corresponding correlation with the financial performance of the insurers. Through a system of evaluation, marketing performance management leads to a proactive governing of processes which result in reduced costs and increased efficiency, and consequently improves agricultural insurance.

Conclusions and suggestions for further research

The aim of this paper is to emphasize how modern marketing can promote agricultural insurance. Insurance companies can affect the willingness of farmers and their decision to conclude an insurance contract. In doing so, they use all elements of the marketing mix: insurance products, insurance premiums, distribution channels and promotion. These instruments should be carefully defined and tailored to the needs of the farmers and affordable. In this respect, they should take into account all the peculiarities of agricultural markets and farmers themselves. It is necessary to implement a marketing concept appropriately, and constantly measure the effects of marketing investments in agricultural insurance. One of the most commonly used indicator of marketing effectiveness is the ROMI coefficient, which is, unfortunately, still insufficiently used in the developing economies, and in our practice as well.

On the other side, farmers often are not familiar with all the effects and benefits that they can have from agricultural insurance, especially from new, contemporary forms and insurance lines. An important task of the insurers is to implement the education process for the

insured persons/business entities, so that they can better understand the characteristics of this insurance system and the necessity of the development of agricultural insurance. These activities, which are primarily classified as the so called pull factors, should be adequately supported by a controlled state intervention that produces push factors in the growth of insurance market in the agriculture sector. However, any excessive state interference is evidently counterproductive. This policy does not give the expected results for at least two reasons: (1) farmers will continue resorting to the internal methods of overcoming the risks in their practice (diversification of production), (2) producers are permanently unable to adapt to the specific market conditions. The consequences are twofold. *First,* due to unspecialized production it prevents the development of modern, highly efficient agriculture. *Second,* the role of insurance companies is completely neglected, which has multiple negative effects, not only in the context of agricultural production, but also in the overall economy.

Finally, this research is primarily theoretical since it aims at explaining the possibility of using marketing metrics in agricultural insurance burdened with the sector particularities. The application of modern marketing concept could have a decisive role in the popularization of insurance in agriculture. It implies a comprehensive knowledge of the specific needs and characteristics of the insured, as well as designing the marketing mix in concrete terms that give the best financial and other complementary business results. Measuring return on marketing investment is a very useful tool, and insurance companies could use it as a basic indicator of investment in marketing, in general, and especially of investment into certain instruments of the marketing mix. It would be also useful to investigate whether and to what extent the insurance companies use this indicator. Also, it would be important to investigate whether there is a difference in the degree of the use of this indicator, depending on the ownership structure of the insurance companies and individual fields of insurance. Future research should also focus on the analysis of different models of agricultural insurance applied in the developed economies, as well as on finding the best modalities for adoption of good practices in the less developed countries.

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ULOGA MARKETING MIKSA U UNAPREĐENJU OSIGURANJA POLJOPRIVREDE

Žaklina Stojanović [4]***, Mirjana Gligorijević*** [5]***, Tatjana Rakonjac Antić*** [6]

Rezime

Specijalizacija je u poljoprivredi usko povezana sa povećanim rizikom. Osiguranje se često koristi kao metod transfera rizika sa poljoprivrednika na osiguravajuću kompaniju. Razvoj savremenog agrara ima za preduslov povećanje obuhvata osiguranja. Zato je predmet ovog rada analiziranje mogućnosti prilagođavanja ponude osiguranja specifičnim potrebama agrosektora, sa ciljem povećanja broja osiguranih poslovnih subjekata. Prvo, neophodno je pravilno definisati marketing miks u osiguranju poljoprivrede. Drugo, jednako je važno permanentno meriti efikasnost i opravdanost njegove primene. Značaj jednog od najčešće korišćenih pokazatelja - Koeficijenta prinosa na marketing investicije (The Return on Marketing Investments Coefficient - ROMI) je posebno istaknut.

Ključne reči: *agrobiznis, osiguranje poljoprivrede, marketing miks, marketing metrika.*

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EVALUATION OF REALIZED INVESTMENTS IN AGRICULTURE IN AREA OF UPPER DANUBE REGION[1]

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Summary

Special natural reserve „Upper Danube" is protected natural area I category, which extends on the left bank of Danube river in Republic Serbia. The reserve is part of large marshland complex and represents one of the last large floodplains on the ground of the European continent. Getting into consideration the natural conditions, production resources, the structure of agricultural production and related activities, and environmental, infrastructural and social conditions in which these economic activities take place, formed the basis for research on the Upper Danube. For research purposes, this field is viewed in the broader context of the administrative area includes the city of Sombor and Municipalities: Apatin, Bač and Bačka Palanka. On the other hand, from the perspective of the enlargement process of the European Union (EU), derived for our country and the importance of capital investment for sustainable development imposed by the need to analyze the economic efficiency of investment in agriculture. Accordingly, the research activity is conducted within the boundaries of the analysis of investments in agriculture in the Upper Danube.

Key words*: investments, agriculture, Upper Danube, Republic of Serbia*

JEL: *Q14*

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Introduction

Looking at the geographical and strategic priorities of local governments that are located in the Upper Danube, possibilities of development through key strategic agendas of documents related to the close cooperation with the cities/municipalities in the frame of cross-border and international cooperation.[5]

Cross-border cooperation opens the possibility of awarding grants for the implementation of cross-border cooperation between Croatia and Serbia (IPA Cross-border Programme Croatia-Serbia 2007-2013)[6], and between Hungary and Serbia (IPA CBC program Hungary-Serbia 2007-2013)[7].

Potential users of financial endorse IPA CBC programs, achieving the strategic priorities of the ability to see through the development of projects in the field of economic.

The commitment of our country to European integration requires a new definition of the role and importance of the agricultural sector, as well as making a very clear conceptual framework and strategies that will answer the key questions in the field of sustainable development. The EU accession process is expected to adopt a number of new reform legislation, and for investors the most important are laws concerning land and construction, and regulation of industrial and technology parks (Subic et al., 2012).

One of the classifications adopted in the literature, all investments are shared on *economic and non-economic*. The basic function of economic investment is that it assures the continuity of the production process at the same level, ie. simple reproduction. Consequently, they have a role to play in providing replacement of worn-out fixed assets allow the replacement of the production process. Also, business investment and serve to allow the reproduction of the social process of production at a higher level, ie. expanded reproduction. Investment activity is a necessary part of the process of reproduction and the basic prerequisite for efficient performance of material production in the long run (Subić, 2007).

5 First of all, under the Instrument for Pre-Accession Assistance (IPA). In accordance with Council Regulation no. 1085/2006 and Commission Regulation 718/2007 which implements Council Regulation no. 1085/2006, this new instrument for pre-accession assistance serves as a source of financing in the candidate countries and potential candidate countries (including Serbia). The aid will be used to support both the adoption and implementation of the acquis communautaire and the preparation for the implementation and management of common policies.

6 The project proposal include one of the following objectives: to promote business cooperation, to enhance cross-border exchange of goods, to develop labor market mobility, cross-border research, development and innovation (RDI) and joint economic planning, to stimulate the development of tourism in the cross-border regional identity and natural and cultural resources of the border region, to protect and safeguard the natural resources of the border region through participation in joint activities and awareness-raising, to promote good relations between communities on both sides of the border..

7 IPA CBC Programme Hungary-Serbia 2007-2013, adopted by the European Commission, 25.03.2008. year. The indicative financial allocation (IPA funds), for a period of seven years (2007-2013. Years), amount to 50.1 million. €.

At the present level of economic development, many companies in Serbia have adverse business performance, manifested through declining market share and profitability, increasing indebtedness, inadequate investment and increased volume of diversified business ventures at the expense of the primary job. Although he established a growing trend of investment, macroeconomic indicators of investment trends in Serbia show a high risk investment in domestic enterprises, which prevents dynamic investment. Risk reduction would increase the attractiveness of the investment, which is a stimulant for domestic and foreign investors to evaluate various combinations of risk and yield (Subić et al., 2008).

In order to obtain the most realistic picture possible of the current *total investments in fixed assets*, a chart showing the investment in the Republic of Serbia, the Autonomous Province of Vojvodina and the Upper Danube. The analysis covers the period of ten years (2001-2010.), For all of these areas (*Table 1*).

Table 1. Total investments in fixed assets * (in 000 RSD)

Year	Republic Serbia**	AP Vojvodina		Upper Danube		
	RSD	RSD	% of the total investment in Serbia	RSD	% of the total investment in Serbia	% of the total investment in AP Vojvodina
2001	55.188.399	13.348.396	24,19	1.600.745	2,90	11,99
2002	102.860.663	23.302.691	22,65	2.922.406	2,84	12,54
2003	115.662.223	25.685.814	22,21	2.143.475	1,85	8,34
2004	152.929.464	29.484.398	19,28	3.442.369	2,25	11,68
2005	163.549.507	29.773.399	18,20	3.794.830	2,32	12,75
2006	340.795.050	94.317.316	27,68	4.895.258	1,68	5,19
2007	482.340.888	115.475.861	23,94	9.262.916	2,32	8,02
2008	472.746.680	112.438.685	23,78	16.178.900	3,42	14,39
2009	369.438.089	88.495.250	23,95	7.329.942	1,98	8,28
2010	425.400.001	100.024.608	23,51	8.446.205	1,99	8,44

Source: Republic Statistical Office. *Municipalities in Serbia 2002-2011*; Republic Statistical Office. *Investments of the Republic of Serbia 2002-2011.*

* *Investments in fixed assets.*

***Without datas for Kosovo and Metohija (with the exception of the 2010th year).*

During the whole of the observed period (2001-2010. year), both at the level of the Republic of of Serbia in general, and the AP Vojvodina, there has been an upward trend in investment that is sub-period 2008-2009. years suspended, and primarily due to the impact of the global economic crisis.

At the level of the Upper Danube, the amount of investment in the period 2001-2010. year follow visual oscillations which are the most expressive in the sub-period 2007-2009. years. Summarily speaking, recorded a positive trend in some years oscillates visibly bringing about a reduction in economic growth and social security.

Upper Danube share of investment in total investment of Serbia ranges from 1.68 (in 2006.) To 3.42% (in 2008.). The largest amount of investments made in the study area in 2008. year (ie *16.178.900.000,00 RSD*), when its share of investments in the Republic of Serbia amounted to 3.42%. On the other hand, the minimum amount of investment made in the Upper Danube in 2001. year (ie, thousands *1.600.745.000,00 RSD*), when his involvement in the investment level R. Serbia amounted to 2.90%. In the last analyzed year (2010.), total gross fixed capital formation of the Upper Danube include 1.99% of total gross fixed capital of the Republic of Serbia as a whole (reflecting an increase of 0.01% over the previous year). This increase are owed primarily to higher growth of investment volume of the Upper Danube basin in relation to the increase in investment activity in the Republic of Serbia as a whole.

The share of investments in this area in total investments of AP Vojvodina, ranging from 5.19 (in 2006.) to 14.39% (in 2008). According to this indicator, the largest amount of investment made in the Upper Danube in 2008. year (i.e. *16.178.900.000,00 RSD*), when his involvement in the investment level of AP Vojvodina was 14.39%. On the other hand, the minimum amount of investment made in the Upper Danube in 2001. year (ie, thousands 1.600.745.000,00 RSD), when his involvement in the investment level of AP Vojvodina was 11.99%. In the last analyzed year (2010.), Total gross fixed capital formation in the study area comprise 8.44% of total gross fixed capital of the Province (reflecting an increase of 0.16% over the previous year). In this case, increase is due primarily to higher growth of investment volume of the Upper Danube basin in relation to the increase in investments of Vojvodina.

Calculating the average annual growth rate, it turns out that the rate was at the level of the Republic of Serbia as a whole (25,47%), as well as at the level of AP Vojvodina (25,08%) is greater than the rate achieved at the level of the Upper Danube (20,30%) . On this basis, we can say that the smaller investments caused weaker economic growth in the Upper Danube regard to economic development, to the Republic of Serbia as a whole and AP Vojvodina. Consequently, it may be a fact that points to more unemployment and less open to new jobs in the economy of the Upper Danube basin in relation to the Republic and Provincial levels.

In the process of reform and the preparation of Serbia to join the European Union, the realization of the objectives of the national program for economic recovery and a greater appreciation of the market economy postulates are, in large part, by realization of higher level of efficiency and profitability of production and factors of production (Subic et al., 2008) .

Among the activities that take place in rural areas, the fundamental role of the production of goods necessary for human consumption, as well as in textile, food and other industries. These activities are directly related to the economic function of agriculture, affect the growth and competitiveness significantly contribute to sustainable development (Subic, Jeločnik, 2012b).

As the mover instrument of quantitative and qualitative growth of total agricultural production and factors of production, investments play a crucial role in realizing the goals and priorities of the agricultural and rural development, presvega occupy an important place in the sustainable development of family farms and the creation of conditions for a better life in the countryside.

Investments have the important role in the economic development and economic policies of each country and they must therefore devote substantial attention. It includes significant investments in agriculture, because of the role and importance of agriculture in the economic development of the Republic of Serbia (Pejanovic, Milic, 2008).

Looking at the time period 2001-2010. year, it can be noted that the *gross fixed capital formation in agriculture* in the Republic of Serbia as a whole reflect the periodic variations are most apparent in 2003. year (a decrease of 37,38% compared to 2002.) and 2006. year (an increase of 163,49% compared to 2005.).

AP Vojvodina also monitors unbalanced movement of investments in agriculture, which is particularly prominent 2006th (reflecting an increase of 272,38% compared to 2005.) and 2009. year (reflecting a decrease of 44,56% compared to 2008.).

During the whole of the period (2001-2010. year), in the Upper Danube was recorded very cyclical trend of investments in agriculture, which has increased most notably in 2008. (698,54% compared to 2007.), While the most pronounced decrease in 2009. year (93,27% compared to 2008). On the other hand, despite the fact that in 2010. year (in the last period analyzed) occurred again increased investment in agriculture sector, investments are still insufficient and represents a key issue in the implementation of sustainable agriculture and rural development in the Upper Danube Basin (*Table 2*).

Table 2. Realized investments* in agriculture * ** (in 000 RSD)

Year	Republic Serbia**	AP Vojvodina		Upper Danube		
	RSD	RSD	% total investment in Serbia	RSD	% total investment in Serbia	% total investment in AP Vojvodina
2001	3.146.845	2.148.162	68,26	332.921	10,58	15,50
2002	5.206.654	3.194.058	61,35	417.074	8,01	13,06
2003	3.260.612	1.980.011	60,73	157.466	7,93	7,95
2004	3.721.166	1.980.761	53,23	807.667	21,70	40,78
2005	5.028.793	2.150.020	42,75	329.957	6,56	15,35
2006	13.250.369	8.006.186	60,42	681.551	5,14	8,51
2007	14.384.811	8.518.488	59,22	713.588	4,96	8,38
2008	21.357.929	16.296.382	76,30	5.698.310	26,68	34,97
2009	14.174.921	9.033.965	63,73	383.768	2,71	4,25
2010	9.219.328	6.683.630	72,50	656.937	7,13	9,83

Source: Republic Statistical Office. *Municipalities in Serbia 2002-2011*; Republic Statistical Office. *Investments of the Republic of Serbia 2002-2011.*

** Investments in fixed assets.*

*** Agriculture, hunting, forestry and waterpower engineering.*

****Without datas for Kosovo and Metohija (with the exception of the 2010th year).*

The share of agricultural investment of the Upper Danube in the Serbian agricultural investment ranges from 2.71 (in 2009.) To 26.68% (in 2008.). The largest amount of

investments made in the study area in 2008. year (*ie, 5.698.310.000,00 RSD*), when its share of investments in the Republic of Serbia amounted to 26.68%. On the other hand, the minimum amount of agricultural investment in the Upper Danube region achieved in 2003. year (*ie, 157.466.000,00 RSD*), when his involvement in agricultural investments in the Republic of Serbia amounted to 7.93%.

In the last analyzed year (2010.), realized investments in agriculture in this area include 7.13% of realized investment in agriculture at the state level (reflecting an increase of 4.42% over the previous year). This increase is due to the increasing trend primarily agricultural investment of the Upper Danube compared to the downward trend in agricultural investment in the whole of Serbia.

The share of agricultural investment of the Upper Danube in Vojvodina agricultural investments, ranging from 4.25% (in 2009.) To 40.78% (in 2004.). According to this indicator, the largest amount of agricultural investment in the Upper Danube region achieved in 2008. year (*ie, 5.698.310.000,00 RSD*), when his involvement in the investment level of AP Vojvodina was 34.97%. On the other hand, the minimum amount of agricultural investment in the Upper Danube region achieved in 2003. year (*ie, 157.466.000,00 RSD*), when his involvement in the investment level of AP Vojvodina was 7.95%.

In the last analyzed year (2010.), realized investments in agriculture in this area include 9.83% of realized investment in agriculture at provincial level (reflecting an increase of 5.58% over the previous year). In this case, the increase is due primarily to higher growth observed agricultural investment of the Upper Danube basin in relation to the increase in agricultural investment of Vojvodina.

As in the previous case, using the absolute value of actual investments in agriculture can also get to the average annual growth rate in the project area. Consequently, the results indicate the following:

- For all the observed areas, the average annual growth rate of investment in agriculture have generated positive;
- At the level of the Republic of Serbia as a whole, the average annual growth rate of investment in agriculture is achieved 12.49%;
- At the level of AP Vojvodina, the average annual growth rate of investment realized in agriculture reflects the highest value (13.44%);
- At the level of the Upper Danube, the average annual growth rate of investment in agriculture reflects the actual value of the lowest (7.84%).

Despite the declining trend of investment in some years, particularly as a favorable indicator is then allocated an average annual growth rate of realized investment in agriculture in AP Vojvodina. The fact that points to the advantages of the larger market economy postulates, as well as the realization of the principles of sustainable agriculture and rural development in this area.

Materials and Methods

During the implementation of the underlying research, the need to collect data from multiple sources (scientific and statistical publications) that are primarily related to the following topics: investment in fixed assets, the economy, agriculture and demography.

In order to assess the actual investment in agriculture in the Upper Danube the Republic of Serbia, we used the methodology which involves the calculation of the volume of investment in fixed assets based on the following indicators (Subic et al., 2012a):[8]

- gross fixed capital formation in agriculture per agricultural inhabitant;
- gross fixed capital formation in agriculture per active farmer;
- gross fixed capital formation in agriculture by individual farmers;
- gross fixed capital formation in agriculture per person employed;
- gross fixed capital formation in agriculture per agricultural unit;
- gross fixed capital formation in agriculture per unit of of cultivated land;
- gross fixed capital formation in agriculture per unit of ploughable land.

A way that follows the research scope of investments in agriculture in the Upper Danube, can be useful for each area of the Danube region in Serbia (Metropolitan *area of Belgrade - Novi Sad*, which includes the administrative area of cities: Belgrade, Novi Sad, Pančevo and Smederevo and administrative municipalities: Beočin, Irig, Sremski Karlovci, Inđija, Ruma, Pećinci and Stara Pazova[9]; area of the Carpathian area, which includes administrative municipalities: Golubac, Kučevo Majdanpek, Kladovo and Negotin) and of significant benefit in making managerial decisions on macroeconomic level.

Results and Discussion

In order to obtain a realistic score achieved agricultural investment in fixed assets in the Upper Danube the Republic of Serbia, was chosen set of indicators related to the regional and national levels (*Table 3*).

Looking at the results shown in the table above, it can be concluded that the level of the Republic of Serbia as a whole received the highest value of investments in agriculture by farmers. At the level of AP Vojvodina, as well as at the level of the Upper Danube, the greatest value is expressed in gross fixed capital formation in agriculture per

8 Part of the indicators is taken from the monograph written by: Cvijanović, D., Vladan Hamović, Vesna Popović, Subić, J., Katić, B. Paraušić Vesna (2007*). Multifunctional agriculture and rural development in the AP Vojvodina*. Institute of Agricultural Economics, Belgrade - Serbia.

9 For this area often uses the term Middle Danube

employee.[10] On the other hand, the observed indicators in all geographic areas of the lowest value reported to the actual agricultural investment per unit of agricultural land.

Table 3. The rating of realized investments* in agriculture **

Indicator	UM	Territory		
		Republic Serbia***	APVojvodina	Upper Danube
Gross fixed capital formation in agriculture per agricultural inhabitant ****	RSD	6.372,49	14.845,93	17.488,85
Gross fixed capital formation in agriculture per active farmer ****	RSD	9.838,06	25.449,44	30.418,93
Gross fixed capital formation in agriculture by individual farmers ****	RSD	10.675,87	31.762,71	40.176,67
Gross fixed capital formation in agriculture per person employed *****	RSD	9.816,58	41.118,15	69.663,27
Gross fixed capital formation in agriculture per agricultural unit *****	RSD	2.590,69	3.745,69	3.263,94
Gross fixed capital formation in agriculture per unit of of cultivated land *****	RSD	3.097,34	4.234,62	3.305,16
Gross fixed capital formation in agriculture per unit of ploughable land *****	RSD	3.999,95	4.310,10	3.594,75

Source: Republic Statistical Office. *Municipalities in Serbia 2002-2011*. RSO. *The 2002 census. (Total and agricultural population in Serbia*). RSO. *Investments of the Republic of Serbia 2002-2011.*

** Investments in fixed assets.*

*** Agriculture, hunting, forestry and waterpower engineering..*

**** Without datas for Kosovo and Metohija.*

***** The data were taken in 2002. year (according to the census).*

****** The data were taken in 2010. year*.

For selected indicators, for each analyzed area, achieved the highest and lowest values have the following relationship:

- Republic of Serbia (4,12:1);
- AP Vojvodina (10,98:1);
- Upper Danube (21,34:1).

Whether we look at investments by individual farmers, whether we consider investment per person employed, the highest values were recorded at the level of the Upper Danube, then the AP of Vojvodina, while its lowest value of these investments was in the Republic of Serbia in general. The largest volume of investment per unit of agricultural land, was achieved at the level of AP Vojvodina, then the Upper Danube, while the lowest value of these investments was again in the Republic of Serbia in general.

10 As the level of AP Vojvodina, and the level of the Upper Danube, and in agriculture in the total number of employed persons is considerably lower than the share of agriculture in the total population.

Looking at the first four parameters at the level of the Upper Danube basin are reached much higher values than is the case in the Republic of Serbia in general and the level of AP Vojvodina. Accordingly, the best pilot of the comparative results were obtained with the actual investment in agriculture per person employed (7,10:1 compared to the first case and 1,69:1 to the other case), while the lowest recorded in the results of realized investments in agriculture per capita agricultural (2,74:1 than in the first case and 1,52:1 compared to the second case).

When it comes to the values obtained for the other parameters, the results in this area, although weaker than the areas of Vojvodina, reported an average of more investment in the agriculture sector than is the case with the territory of the Republic of Serbia in celioni. In this context, we can give the following display:

- best pilot comparative results are recorded in realized investment in agriculture per agricultural area jedinioci (1,26:1 than in the first case and 0,87:1 compared to other cases);
- poorest results were obtained with:
  - realized investments in agriculture per unit of ploughable land (0,90:1 compared to the first case);
  - realized investments in agriculture per unit of of cultivated land (0,78:1 compared to other cases).

Conclusions

Having in mind concrete results that were obtained during the assessment achieved agricultural investment in fixed assets in the Upper Danube in Serbia, can be collectively concluded:

- weak overall investment activity, caused the lower growth of the Upper Danube in relation to economic development, as an AP Vojvodina and the Republic Serbia in general;
- the average annual growth rate of total recorded investment in fixed assets, is the lowest level in the Upper Danube;
- highly cyclical movement of investment in agriculture caused the Upper Danube are insufficient to strengthen the competitiveness of the agricultural sector, which is reflected in a weaker ability to achieve the planned growth of agricultural production, productivity and quality of development and export-oriented agricultural products with high added value;
- the average annual growth rate achieved agricultural investment in fixed assets, the lowest level in the Upper Danube;
- a multifunctional agriculture valued aspect, provides an insufficient contribution to the sustainable economic and social development in the Upper Danube;
- as a result of insufficient investment in agriculture is still weak presence of foreign capital, and the efforts of the majority of finance channeled to other sectors of the economy in order to establish balance and ease of valuation of all available areas

of comparative advantage, gross fixed capital formation in agriculture in the Upper Danube, exhibit a sound economic effects.

In the context of the above findings, there is a recommendation that they should leave the area to identify and use other methods for the evaluation of investments in agriculture at the level of the Upper Danube, and the possibility of free choice in the realization of the concept of sustainable agriculture and rural development.

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OCENA OSTVARENIH INVESTICIJA U POLJOPRIVREDI NA PODRUČJU GORNJEG PODUNAVLJA

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Sažetak

Specijalni rezervat prirode „Gornje Podunavlje" zaštićeno je prirodno dobro I kategorije, koje se prostire uz levu obalu reke Dunav u Republici Srbiji. Rezervat je deo velikog ritskog kompleksa i predstavlja jedno od poslednjih velikih poplavnih područja na tlu evropskog kontinenta.Uzimajući u obzir prirodne uslove, proizvodne resurse, strukturu poljoprivredne proizvodnje i prateće delatnosti i ekološke, infrastrukturne i socijalne uslove u kojima se ove ekonomske aktivnosti odvijaju, formirana je osnova za istraživanje na području Gornjeg Podunavlja. Za potrebe istraživanja, ova se oblast posmatra u širem kontekstu i obuhvata administrativno područje grada Sombora i opština: Apatin, Bač i Bačka Palanka. Sa druge strane, perspektive koje iz procesa proširenja Evropske unije (EU) proizilaze za našu zemlju i značaj kapitalnih ulaganja za održivi razvoj nameću potrebu analize ekonomske efektivnosti investicija u poljoprivredi. Shodno tome, istraživačka aktivnost se odvija u granicama analize ostvarenih investicija u poljoprivredi na području Gornjeg Podunavlja.

Key words: *investicije, poljoprivreda, Gornje Podunavlje, Republika Srbija*

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FORMS OF ENVIRONMENTAL CRIME IN AGRIBUSINESS[1]

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Summary

The environment represents our surrounding from which numerous capacities essential for normal functioning of living things are derived. Main, long-term goal of agribusiness is to ensure sufficiently stabile production of quality food, and at the same time to preserve essential natural resources, protect the environment and improve the life of individuals and of the broad community. For this purpose numerous measures are implemented which sometimes create new problems facing the human population in increasingly severe form and which, in addition to the expected positive impacts, also have numerous, long-term negative impacts on agro-eco systems. Today, the society is faced with increasingly complex environmental/ ecological problems which occur as the result of inadequate use of agro and zoo technical measures in agricultural production, as well as the result of their actions contrary to the „code of good agricultural practice". The vulnerability ranges from the mildest forms within the limits of tolerance, to the worst forms expressed to greater extent, where the consequences are manifested in form of ecological/environmental offenses. Wide range of forms of environmental crime endangers the environment with the negative impact on human life and health. This form of crime, compared to other forms, is far more dangerous since it can destroy the national economy, lead to spreading of different diseases and extinction of rare species of flora and fauna.

Key words: *agribusiness, environmental crime, forms, prevention*

JEL: *K 14, K22*

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Introduction

Civilization is a result of the awareness of the human species on a permanent transformation of nature in order to meet basic needs. Its development is based on a number of activities that apply modern scientific and technical achievements, although these activities are connected with the risk of occurrence of various harmful effects on the environment. Society needs to control risks in these activities without which the normal life flow and social progress are not possible. The control of risky activities includes planned approach[5] and taking into account all relevant factors[6] in order to reduce harmful consequences to the minimum.

The range of the environment contamination is from the mildest forms within the tolerance, to the worst forms expressed to great extent, where the consequences are manifested in form of environmental offenses. Environmental crime directly endangers the environment, and indirectly the human life and health.[7] This form of crime is very susceptible for committing, since it enables generating of huge profits with minimal risk of prosecution, especially in criminal acts with elements of organized international crime. Organized criminal groups are often involved in environmental crime, and their activities are usually associated with trade in natural resources, illegal trade in flora and fauna, trade and disposal of dangerous waste, illegal fishing and illegal trade in minerals and precious stones. These criminal groups can generate huge profits with low risks due to deficiencies in the legislation and implementing regulations in many states[8]. There is an obvious link between environmental crime, social development and the rule of law. Good functioning of the criminal justice system, absence of corruption and attachment of the government to the rule of law is important to the economic, political and social development. On the other hand, in a corrupt environment where there is no respect for the rule of law, civil servants can sign a falsified license to import and export, facilitating the trafficking of illegal goods, or just ignore such a trade, and also prevent proper assessment of the nature and extent of environmental crime in the way to undermine the criminal justice system[9]. Ecological crime is a serious international problem which has various forms, which are not limited to air, water and soil pollution, or the extinction of plant and animal species, but also apply to actions accelerating climate change, a drastic reduction of fish stocks, the devastation of forests, etc. - to the destruction

5 Novković, N., Janković, N., Ceranić, S. (2000): *Planska odluka u agriondustrijskom kompleksu*. Ekonomika poljoprivrede, časopis Saveza poljoprivrednih inženjera i tehničara Jugoslavije, vol. 47 (1-2), p. 97-108, Beograd.

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7 See details: Bošković, M. (1993): *Metodika - Otkrivanje i razjašnjavanje ekološkog kriminaliteta.* VŠUP, Beograd.

8 Kangaspunta K., Haen Marshall I. (eds.) (2009): *Eco-crime and justice – Essays on environmental crime*. UNICRI – Public information department, Turin: p. 12.

9 *Ibid*.

of natural resources in general.[10] International environmental crime covers five broad areas of offenses in violation of key international documents as follows: 1) illegal trade in wildlife in violation of the Washington Convention on International Trade in Endangered Species of Flora and Fauna from year 1973, 2) trafficking of substances that deplete ozone in violation of the Montreal Protocol on substances that deplete the ozone layer from year 1987, 3) storage and illegal transportation of various types of hazardous waste in violation of the Basel Convention on the control of trans-boundary movements of hazardous and other wastes and their disposal from year 1989, 4) illegal fishing contrary to measures of control of regional organizations to manage fish stocks, and 5) illegal logging and timber trade when the trees are harvested, transported, bought or sold contrary to national legislation[11]. Because of the danger of ecological crime, criminal protection of the environment has been considerably expanded. In Serbia, the environment is value protected in the first place by the Constitution and the Penal Code. In addition to the direct criminal-legal protection, the environment is indirectly protected by a number of laws and regulations (by-laws) in other areas, which provide appropriate sanctions for violations of specific human-environmental values[12]. In the European Union, more than 200 regulations and directives that are explicitly linked to the natural environment are in effect, and are related to air and water pollution, waste management, biotechnology, nature conservation and nuclear safety. Other issues that are regulated by EU regulations include access to information in the field of environmental protection and liability for environmental damage, and in order to promote environmental protection the European Environment Agency, based in Copenhagen, is established[13].

Environmental protection is a fundamental precondition for the development of agricultural production, which involves directing and controlling the biological processes of growth and development of plants and animals. At the present level of development of productive forces, relation between agriculture and ecosystem equilibrium is more significant. Already, environmental, economic and social imbalances affect agricultural development and can have a negative impact on future developments[14]. In almost all developed countries there has been a degradation of the environment, which, among other things, is consequence of pollution from intensive agricultural production. Extremely rapid growth in agricultural output was

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mostly at the expense of the environment. Problems in protection of the environment are due to the improper use of chemicals in agricultural production, which are improperly and unprofessionally used by farmers and thus greater amounts of pollutants are introduced into the soil and surface and ground waters.

State of the environmental crime in Serbia

In addition to the general characteristics, environmental crime is characterized by particular characteristics. As its special characteristics, which are analysed in the present study, the following can be mentioned:

- Quantitative characteristics of ecological crimes (scope), the relative share in the total mass of crime, the dynamics
- Structure of ecological crimes or types of crimes that make it, the participation of these offenses in the overall environmental crime and their dynamics.

These characteristics will be analysed based on the available statistical data relating to the Republic of Serbia for the period 2006-2010, which, with all the limitations and drawbacks, however, represent an indispensable source of information on crime detected.

Table 1. Volume of reported crime acts of the environmental crime in the Republic of Serbia in the period 2006-2010.

Year	Total reported crime acts	Reported crime acts of the environmental crime	Index
2006	105.701	2009	1,90%
2007	98.702	1831	1,85%
2008	101.723	1895	1,86%
2009	100.026	2081	2,08%
2010	74.279	1568	2,12%

Source: Statistical bulletin of the Statistical Office, 2006, 2007, 2008, 2009, 2010, Belgrade.

In regard to the scope of environmental crime on the territory of the Republic of Serbia and its relative share in the total volume of crime, Table 1 shows that the share of ecological criminal offenses in each of the observed years was about 2%. On the territory of the Republic of Serbia, in year 2006 - 2009 were reported, in 2007 - 1831, in 2008 - 1895, in year 2009 - 2081, in 2010 - 1568 criminal acts of the ecological crime. Significant reduction in the number of reported crimes in years 2007 and 2008 is noticeable, in the relative terms and in year 2010 in absolute terms. During the reporting period, the tendency of notification of environmental crime is rather uniform, except in year 2010, but in that year the share of the total environmental crime in total crime was about 2%.

Table 2. Structure of reported crimes of environmental crime in the Republic of Serbia in the period 2006-2010.

Year	Total CA against the environment	Pollution of environment Article 260	Failure to take measures to protect the environment Article 261	Damage to environment Article 264	Introduction of hazardous materials to Serbia and illegal processing, disposal and storage of hazardous materials Article 266	Devastation of forests Article 274	Forest theft Article 275	Illegal hunting Article 276	Illegal fishing Article 277	Other CA
2006	2009	16	9	4	1	182	1543	134	63	58
2007	1831	19	24	7		142	1314	154	68	107
2008	1895	21	12	2		128	1374	115	112	131
2009	2081	16	8	16		157	1462	172	111	39
2010	1568	7	4	8		69	1090	99	63	218

Source: Statistical bulletin of the Statistical Office, 2006, 2007, 2008, 2009, 2010, Belgrade

In regard to the structure of discovered and reported/filed charges for ecological crime offenses, the data in Table 2 show that the crime act "Forest theft" stipulated in Article 275 of the Criminal Code of the Republic of Serbia (hereinafter: SCC) is dominating in the structure of ecological criminal offenses in the Republic of Serbia for the period 2006-2010. This offense comprises 76% of the total number of reported ecological crime in year 2006, 73.2% in year 2007, 72.5% in year 2008, 70.25% in year 2009 and 69.5% in year 2010, or about 72.3% on average for that period.

The next criminal offense in respect to the frequency and share is "Illegal hunting" (Article 276 SCC), which makes an average of about 7.2% of the total number of reported offenses of ecological crimes in observed five-year period. About 4.4% of the total number of reported offenses of ecological crimes is criminal offense "Illegal fishing" (Article 277 SCC). The above three crimes together with the offense – "Devastation of forests" (Article 274 SCC) in the structure of discovered and reported ecological crimes make up about 91%, while other crimes together account for about 9%.

Although in recent years the environmental crime is in expansion, the percentage of filed charges for criminal offenses against the environment is negligible compared to other crimes. Presented statistics show large differences between the numbers of filed charges for criminal acts as stipulated by SCC, Chapter XXIV. The data show that the most common charges are for forest theft, illegal hunting and fishing, as well as the devastation of forests. Data of other researchers show that the illegal timber trade is one of the most present illegal

activities in the field of environmental crime[15]. Considering that the wood is difficult to smuggle hidden, complex methods are used in the illicit trade, and only few organizations are able to exploit the opportunities of this illegal trade. The evidence from Indonesia shows that companies that cut were often involved in extensive illegal cutting, and senior executives in these companies were accused of organizing illegal trade. Poor regulation and the difficulty in identifying the seized wood contribute to the existence of weak evidence to show the volume/scope of trade. The relationship between the illegal trade and the threat that it poses to the endangered species is not only direct, because few species of trees are on the protected list. However, logging destroys the habitat of endangered species, and often directly protected animal species[16].

Data from these tables show that the small number of crimes against the environment has been detected, although it can be assumed that the real number of committed crimes in this filed is much higher. The crimes that are not registered represent ‘’dark figure“of ecological crime[17].

Environmental pollution and other environmental crimes in agribusiness

Many contemporary environmental damages are associated with the way in which the livelihood of people is reconstituted and reorganized through the global system of production, so that, for example, the globalization of food production, and the production and use of new technologies and chemical products in agriculture and production of food, have created a variety of risks for people, animals, the environment and health, so that in many cases the long term effects of the new development in the field of food production are still unknown[18]. Patent protection ensures that large agribusiness companies are able to control the market and production processes, especially when it comes to patents of existing organic materials and technological development (through genetic modification of organisms), and the goal is to make a direction producers - farmers - reliance on commercially purchased seeds and related products such as fertilizer and pesticides[19].

Ecological crime comprises a wide range of activities. Due to space constraints and objectives, offenses which directly incriminate endangering of the environment will be discussed: water, air, soil, plant and animal life in agricultural practice. The problem of degradation of the environment due to improper use of measures and resources in agribusiness and due to

15 Cook, D., Roberts, M., Lowther, J. (2002): *The International Wildlife Trade and Organised Crime – A review of the evidence and the role of the UK*. Regional Research Institute, University of Wolverhampton, p. 16.

16 *Ibid,* p. 16.

17 See details: Bošković, M., Banović, B. (2001): *Kriminalistika metodika*. VŠUP, Beograd.

18 White, R. (2009): *Dealing with climate change and social conflict: a research agenda for eco-global criminology*. – *In:* Kangaspunta K. & Haen Marshall I. (eds.) *Eco-crime and justice – Essays on environmental crime*. UNICRI – Public information department, Turin, p. 25.

19 *Ibid*.

action of natural and legal persons contrary to the "code of good agricultural practice" will be analysed. In the following presentation, a brief overview is given of the basic form of pollution of main factors of the environment - water, air and land in agricultural production and the essence of the individual elements that affect the quality of the environment.

Sources and methods of water pollution in agricultural production

Agriculture is a major consumer of water, and its water requirments are estimated at 70% and in less developed countries even more than 90%[20]. These requirements are even ahead of the requirements of cities and industries, and it is very important to protect the water from pollution.

On many farms, wells that supply people with drinking water are located near the sources of pollution that can be dangerous to human health. Agricultural production also pollutes the water in the canals, rivers and lakes. Water is polluted by nitrates runoff from fertilizers with other harmful compounds such as phosphates, fats, oils, pesticides and pathogens[21].

The application of mineral and organic fertilizers and crop cultivation is an important agro-technical and economic measure, but its excessive use can threaten water and soil quality, and therefore it has to meet the requirements of agricultural crops for nutrients. Otherwise, a high concentration of nutrients can cause eutrophication of water bodies[22], water/soil acidity imbalance, and heavy metals and harmful substances can get into groundwater and surface water[23].

Among the most serious sources of water pollution are backyard livestock farms, barns, manure storage facilities or storages of manure on the fields. When discharged into surface water, biodegradable materials are broken down and ammonia oxidizes, consuming in the process dissolved oxygen in the water that is necessary for underwater plant and animal species. Serious reduction of the level of dissolved oxygen can cause death of the entire river wildlife. Manure can get into surface water directly from animals on pasture, due to damage to the structure of the warehouse, or overflow or errors of farmers, as well as

20 Kovačević, D., Lazić, B., Milić, V. (2011): *Uticaj poljoprivrede na životnu sredinu*, International Scientific Symposium of Agriculture - Agrosym Jahorina 2011, November 10-12, 2011, Jahorina, University of East Sarajevo, Faculty of Agriculture, RS, B&H, University of Belgrade, Faculty of Agriculture, Serbia, Academy of Engineering Sciences of Serbia, Serbia, IAE, Serbia, B.EN.A, Greece, BSAAE, Serbia, p. 37 (http://www.pof.unssa.rs.ba / Agrosym_2011_ Proceedings /pdf/ Plenary_lectures/ Kovacevic_D_et_al.pdf)

21 Bergman, N., Carlson, G., Dalmacija, B. (2010): *Pravila dobre poljoprivredne prakse,* DREPR, p. 16. (http://www.avm.rs/dokumenti3/Pravila%20dobre%20poljoprivredne%20prakse_nasl.pdf)

22 *Eutrophication* - process of aging of aquatic eco-systems. The increase of concentrations of nitrogen and phosphorus occurs, as well as increase of other biogenic elements, causing increased intensity of primary production.

23 Bergman, N., Carlson, G., Dalmacija, B. (2010): *Pravila dobre poljoprivredne prakse,* DREPR, p. 16. (http://www.avm.rs/dokumenti3/Pravila%20dobre%20poljoprivredne%20prakse_nasl.pdf)

through leaching if applied in excessive amounts or not implemented properly. For example, the application of manure on frozen or saturated soil can result in discharging into streams. Other conditions that increase the risk of manure runoff into surface waters are steep slopes soil, heavy rain, low porosity of soil and proximity to surface waters such as rivers and lakes. Runoff from fields where manure has been applied can be a source of contamination by pathogens, especially if the rainy season comes immediately after the application of manure. Microorganisms are usually retained in soil layers near the surface, creating the possibility for the mechanism of pathogen transportation by surface water flows[24].

Generally, mineral fertilizers pose risk to the environment if not stored or not handled with proper and adequate care. The contamination of water can occur if the fertilizer residues and empty containers are disposed of or equipment used washed in places inadequate for these purposes. The negative impact of penetration of fertilizers in the water is reflected in increased concentrations of nitrates and phosphates, their accumulation and ultimately eutrophication of aquatic species and extinction of plants and animals.

Waste water from farms typically consists of dirty water (drained from plant cultures, liquid from washing of the equipment in the milking parlour and dairy plants). These wastewater pollutants are much greater contaminants than the sewage water from households with high BOD (biological oxygen demand), which is why their collection and storage and spreading to land are two major critical points in their handling. Intensive pollution of waterways can occur if the facilities for the storage or pools/basins/tanks are of inadequate capacity resulting in overflows or improper construction resulting in leakage.

Sewage waste water from farms is traditionally collected in the pits/lagoons, and after a period of confinement of usually 60 days, accumulated sludge is applied to fields as fertilizer. This practice causes the emission of greenhouse gases (methane), and can lead to leakage from the pits/lagoons/tanks into groundwater if not properly constructed pit[25].

Pesticides can occasionally cause water pollution, mainly because they are not stored, applied/deployed properly or are blown into streams during application. The consequence of such treatment may be the presence of heavy metals in water (e.g., mercury, cadmium, copper), and indirectly, in living organisms, which can lead to acute intoxication or accumulation of toxic elements[26].

Sources and methods of air pollution in agricultural production

Of all forms of pollution of environmental factors, air pollution is one of the oldest forms of pollution, which occurred when the first craft activities started during ancient times[27]. Sources of air pollution in agricultural production come from facilities and yards on livestock farms,

24 *Ibid*, p. 17.

25 *Ibid*, p. 18.

26 *Ibid*, p. 18-19.

27 See details: Bošković, M. (1993): *Metodika - Otkrivanje i razjašnjavanje ekološkog kriminaliteta.* VŠUP, Beograd.

farmland during and after the application of manure and sludge, production facilities and other facilities for manufacturing of animal products. Emission flows contain: dust, greenhouse gases - methane, nitrous oxide and ammonia. Also, changes occur in the natural relations and the concentrations of the main air components. These gases and particles can get into the atmosphere naturally, due to volcanic eruptions and natural fires, but more often due to the influence of human activities in agriculture, burning of coal, oil, natural gas and wood[28].

In agriculture, the ammonia is traditionally recognized as a problem that occurs in livestock facilities with poor ventilation or in those which are poorly maintained. Ammonia accumulated within the system facilities can adversely affect the health of animals, and thus the production. Ammonia has a negative impact on human health, irritates the eyes and respiratory tract even in low concentrations. Generally, ammonia poses a risk to the environment whether it appears as a gas or when transferred to soil and water.

Ammonia fumes from animal excrement (faeces, urine) can have a significant negative effect if the rules of good hygiene in the facilities for livestock are not respected. Storage of any kind of manure is followed by emissions of ammonia, and to avoid the loss of nitrogen the direct contact of air must be reduced by covering manure storages. However, storage of solid and semi-solid manure is for practical purposes impossible to cover[29].

Types and sources of pollution of land in agricultural production

Soil[30] is of special importance to agriculture, and its pollution is increasingly present. In recent times, various chemical substances are used extensively to increase the resistance and obtain higher yields, primarily fertilizers, pesticides, imported phosphorous fertilizers supplied with uranium and other resources used to stimulate growth and development of plants that pollute the soil. Causes of soil pollution are industrial waste water, toxic gases from industrial plants and the disposal of radioactive waste. All this leads to a greater presence of radioactive nuclides in soil, and excessive use of nitrogen fertilizers in particular affects the plants and soil pollution by nitrates and nitrites, which results in the acceleration of the alkalization and salinization, as well as the pollution of groundwater[31].

28 Kovačević, D., Lazić, B., Milić, V. (2011): *Uticaj poljoprivrede na životnu sredinu*, International Scientific Symposium of Agriculture - Agrosym Jahorina 2011", November 10-12, 2011, Jahorina, University of East Sarajevo, Faculty of Agriculture, RS, B&H, University of Belgrade, Faculty of Agriculture, Serbia, Academy of Engineering Sciences of Serbia, Serbia, IAE, Serbia, B.EN.A, Greece, BSAAE, Serbia, p. 38.

29 Bergman, N., Carlson, G., Dalmacija, B. (2010): *Pravila dobre poljoprivredne prakse*. DREPR, p. 16. (http://www.avm.rs/dokumenti3/Pravila%20dobre%20poljoprivredne%20prakse_nasl.pdf)

30 Bošković, M. (1993): *Metodika - Otkrivanje i razjašnjavanje ekološkog kriminaliteta.* VŠUP, Beograd., p. 23.

31 *Ibid*, pp. 23-24.

The goal of sustainable agriculture is preservation of healthy and good quality soil, so it must be carefully cultivated and protected from erosion[32]. Land degradation is the loss of fertility due to changes in physical properties (soil type, humidity), chemical (pH, organic matter, nutrients and trace elements) and microbial characteristics, and agricultural activities significantly affect these characteristics[33].

Organic matter content in the surface layer of the soil affects its physical, chemical and biological properties, particularly its structural stability. Soil stability is reflected in the probability of occurrence of erosion, ease of cultivation of land, water retention and nutrient availability to plants, and it also affects the behaviour and mobility of contaminants. Increased concentrations of heavy metals (mercury, cadmium, copper, etc.) due to the application of pesticides and herbicides accumulate in plants, entering the food chain and are introduced into animals and humans. High concentrations of heavy metals have toxic effects, so for that reason those are regulated by special laws[34].

Soil erosion affects water pollution with particulate matter and sediment and nutrient and pesticide pollution, which are carried by particles of soil. Compared with air and water pollution, soil pollution process is slower, but polluted states are more stable and of long-term consequences. Pollution and destruction of land are not yet fully perceived, and the consequences are to great extent based on estimates[35].

The main manifestation of ecological crime in agriculture is "Environmental pollution", crime incriminated in Article 260 SCC. This offense has four forms. The first paragraph describes the basic operations of a criminal offense, which could be done intentionally; the second paragraph is a form of negligence, while in the paragraphs 3 and 4 severe forms of the offense are described. The main action in the commission of the offense consists in the violation of regulations on the protection, preservation and enhancement of the environment, which as a consequent action results in pollution of water, air or soil to a greater extent or over a wider area[36]. It is a blanket provision, because violations can relate to violations of the Law on Environmental Protection[37], Law on Air Protection[38], Law on

32 Kovačević, D., Lazić, B., Milić, V. (2011): *Uticaj poljoprivrede na životnu sredinu*, International Scientific Symposium of Agriculture - Agrosym Jahorina 2011, November 10-12, 2011, Jahorina, University of East Sarajevo, Faculty of Agriculture, RS, B&H, University of Belgrade, Faculty of Agriculture, Serbia, Academy of Engineering Sciences of Serbia, Serbia, IAE, Serbia, B.EN.A, Greece, BSAAE, Serbia, p. 38.

33 Bergman, N., Carlson, G., Dalmacija, B. (2010): *Pravila dobre poljoprivredne prakse*. DREPR, p. 19. (http://www.avm.rs/dokumenti3/Pravila%20dobre%20poljoprivredne%20prakse_nasl.pdf)

34 *Ibid*, p. 20.

35 Bošković, M. (1993): *Metodika - Otkrivanje i razjašnjavanje ekološkog kriminaliteta.* VŠUP, Beograd., pp. 23-24.

36 Škulić, M., et al. (2011): *Priručnik za zaštitu životne sredine*. Udruženje tužilaca i zamenika javnih tužilaca Srbije, Beograd, p. 12.

37 Službeni glasnik RS, br. 36/09 i 88/10.

38 Službeni glasnik RS, br. 36/09.

the protection and sustainable use of fish stocks[39], the Animal Welfare Act[40], the Act on Protection against Ionizing Radiation and Nuclear Safety[41] and the Law on chemicals[42]. Penalty stipulated for the basic form of is a sentence ranging from six months to five years and a fine.

For the existence of severe form, stipulated in paragraph 3 of Article 260 of SCC, the destruction of or damage to animal or plant life on large scale has to occur, or environmental pollution to the extent that its removal takes long time and extensive expenses. Penalty stipulated for the qualified form is punishable by imprisonment of one to eight years and a fine.

If the basic form of the offense is committed negligently, stipulated sanction is a fine or imprisonment of up to two years (Article 260, paragraph 2 of SCC), and if it is a severe form of negligence stipulated in paragraph 3, penalty prescribed is imprisonment of six months to five years and a fine. In case of suspended sentence for these types of offenses, the court may order the offender to undertake, in the specified time limit, certain prescribed measures to protect, preserve and improve the environment (paragraph 5)[43].

Similar to foregoing manifestations of the ecological crime is offense – "Failure to take measures to protect the environment" from Article 261 of RSCC. The offense under paragraph 1 is committed by an official or responsible person who is not taking appropriate measures to protect the environment or do not comply with the decision of the competent authority to undertake environmental measures. In the first case, when determining the action executed, the sanction is provided in the event of failure to take measures to protect the environment, which is required by law and by-laws. In the second case, the sanctions are foreseen in case of failure to take measures stipulated by the individual act of the competent authority. This is a blanket norm and the existence of crime depends only on individual acts/documents and regulations. Consequence of the offense is an abstract threat, and the offense can be done intentionally and negligently. An example would be failure to install a device for purifying which the responsible person was obligated to do according to the regulations on protection of the environment from pollution.

Punishable penalties include fines or imprisonment of up to three years if the basic form of the offense (paragraph 1) is committed premeditated, or a fine or imprisonment of up to one year if the offense is committed negligently. In case of a suspended sentence, the court may order the offender to take regulated measures to protect, preserve and improve the environment within certain specified time limit. If the environmental pollution occurred, it is stipulated that the offender will be punished for the crime of Article 260 of SCC.

39 *Ibid*.

40 Službeni glasnik RS, br. 41/09.

41 Službeni glasnik RS, br. 36/09.

42 Službeni glasnik RS, br. 36/09, 88/10 i 92/11.

43 Škulić, M., et al. (2011): *Priručnik za zaštitu životne sredine*. Udruženje tužilaca i zamenika javnih tužilaca Srbije, Beograd, p. 14.

In addition to these forms, which might be called the classical environmental crime, it is important to note *Illegal hunting* (Article 276) and *Illegal fishing* (Article 277), as forms of environmental crime in agribusiness, which significantly threaten the environment and at the same time generate *high profits* for the perpetrators, and are very hard to detect, causing extremely serious adverse consequences for the environment, with the existence of a high risk of *extinction of rare species of fauna.*

There are a number of other offenses which may also greatly endanger the environment. They include crimes such as transmitting infectious animal and plant diseases (Article 270), negligent veterinary services (Article 271), the production of harmful devices for the treatment of animals (Article 272), contamination of food and water for animal nutrition and drinking (Article 273), the devastation of forests (Article 274) and forest theft (Article 275). The European Union has adopted in 2008 the Directive 2008/99/EC on the protection of the environment through criminal legislation, and the deadline for its implementation in the Member States was December 2010. Given that the criminal legislation often had a secondary role in relation to administrative sanctions and civil law penalties, this Directive may indicate stronger commitment attitudes in relation to the violation of the laws governing the environment[44]. Otherwise, in year 1998, The Council of Europe adopted the Convention on the protection of the environment through criminal legislation, but it has not yet taken effect, because it was ratified by only one party. For the purposes of prevention of environmental crime in agribusiness, the operation of the inspection authorities responsible for the control of compliance with numerous laws and regulations in the field of environmental protection is very important. The success of prevention of these crimes proscribed by the Criminal Code of the Republic of Serbia depends largely on the efficiency of the control exercised by the inspection bodies. In this way, the imposition of criminal sanctions which usually cannot eliminate the damage caused to the environment can be prevented in cases of severe environmental pollution.

Conclusion

The development of civilization, industry and agriculture, the expansion of modern transportation and contemporary human activities, population increase, have significantly disrupted the relationship between man and nature. That attitude, along with excessive use of natural resources, food shortages, global climate change, ozone layer reduction, greatly prejudice the survival of mankind.

Environmental degradation in the agricultural production is the result of deliberate omission or failure to implement policies, guidelines and technical standards in the handling of various hazardous energy sources and raw materials, or handling or treatment of otherwise hazardous devices, thus creating conditions for the risk of accidents of various kinds, scope

44 Cardwell, P. J., French, D., Hall, M. (2011): *Tackling environmental crime in the European Union: The case of the missing victim?*, 9th International Conference on Environmental Compliance and Enforcement, 20-24 June 2011, British Columbia, Canada: The International Network for Environmental Compliance and Enforcement, p. 1.

and dimensions of the area and encompassing all that was found in it. These activities constitute criminal conduct, and environmental offenses. Depending on the scope and intensity of the impact on the environment, the implemented activities, the characteristics of the offender and the offense conformity to rules of conduct specified in the laws and by-laws of a general nature, and types of sanctions imposed, numerous environmental offenses are distinguished.

The concept of modern agribusiness development should be based on sustainable management of natural resources and environmental protection, which is achieved by planning and sustainable use of natural resources, as a necessary condition for a balance between environmental protection and economic development. Therefore, the policy of development of modern agribusiness sets the coordination of development with minimal impacts to the environment as the major objective.

Threats to the environment through criminal offenses are a growing problem that causes serious damage. In recent years, a number of actions that threaten it have multiplied. In addition, this type of crime is susceptible to the perpetrators because of the possibilities of realizing large profits with minimal risk of detection and prosecution, especially when it comes to criminal offenses with elements of organized crime of international character. The empirical analysis in this matter may serve as an illustration for an appropriate image aspect of professional practice and collaboration with academic circles. Statistics show that a small number of environmental offenses are revealed, although it can be assumed that the dark figure in this form of criminality is significant.

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POJAVNI OBLICI EKOLOŠKOG KRIMINALITETA U AGROBIZNISU

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Rezime

Životna sredina predstavlja okruženje iz koga se crpe brojni kapaciteti za normalno funkcionisanje živih bića. Osnovni, dugoročni cilj agrobiznisa je da obezbedi dovoljno stabilnu proizvodnju kvalitetne hrane, uz očuvanje osnovnih prirodnih resursa, zaštitu životne sredine i poboljšanje života pojedinca i šire zajednice. Za te svrhe ljudi koriste brojne mere koje ponekad stvaraju nove probleme sa kojima se čovečanstvo suočava u sve oštrijoj formi i koje pored očekivanih pozitivnih imaju brojne dugoročno negativne efekte u agroekosistemima. Danas se društvo sve više susreće sa složenim ekološkim problemima koji se javljaju usled neadekvatne upotrebe agro i zootehničkih mera u poljoprivrednoj proizvodnji, kao i usled njihovog postupanja suprotno „kodeksu dobre poljoprivredne prakse". Dijapazon ugroženosti kreće se od najblažih oblika u granicama tolerancije, do najtežih oblika izraženih u većem obimu, gde se posledice manifestuju u vidu ekoloških delikata. Širok spektar pojavnih oblika ekološkog kriminaliteta ugrožava životnu sredinu sa negativnim uticajem po život i zdravlje ljudi. Taj vid kriminaliteta, u poređenju sa drugim vidovima, je daleko opasniji, jer može uništiti nacionalnu ekonomiju, proširiti razne bolesti i dovesti do istrebljenja retkih vrsta flore i faune.

Ključne reči: *agrobiznis, ekološki kriminalitet, oblici, sprečavanje*

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RELEVANCE OF DIVIDEND POLICY FOR FOOD INDUSTRY CORPORATIONS IN SERBIA

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Summary

The subject of this paper is to analyze dividend policy of ten representative companies in the food industry sector. In the conditions of limited and expensive sources of financing, as a significant alternative to borrowing stands the stock market. In business of domestic corporations, however, the issue of new shares represents a rare event. A very important factor for future development of the primary equity market is an increase in volume of trading on the „asleep" secondary market. Lack of demand and falling trading volume prevents the growth of share prices, and thus the possibility of realizing capital gains from their sale. In such circumstances, the main reason of investment in shares can be dividend yield. The goal of this paper is to analyze the opportunities and to provide guidelines in formulating effective dividend policies in order to attract certain groups of shareholders, among which the most important are institutional investors, which in their portfolios do not usually hold more than a few percent of the shares of individual companies.

Key words: *dividend policy, corporations, food industry, institutional investors.*

JEL: *G35*

Introduction

Corporations are the dominant and most important form of business organization in terms of assets and resources, as well as the scope and breadth of business activities. Because they can attract a large number of investors, corporations represent *an ideal way to increase the equity*. The main reason for an enterprise to perform business in legal form of public corporation is the possibility of *the primary shares' issue*. As another important

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reason, public listing allows to companies daily market valuation and thus shareholder's verification of the business operations' efficiency. On the other hand, there are some business disadvantages in performing business in this form, such as: (1) tougher legislation regarding the establishment and demands for transparency, (2) the costs of establishment and listing on the stock exchange, (3) the obligation of external auditing; (4) agency problems between owners and managers, but also in the relations of the majority shareholders and the minority ones.

Starting from the mentioned advantages and disadvantages of public corporations, it is evident that the vast majority of Serbian corporations failed to make the most of doing business in this legal form, regarding to possibility of new shares issue. In Serbia trading with shares is performed on the Belgrade Stock Exchange (BSE), which was founded by the end of the 19th century. After decades of intermission (from the end of the World War Two until the beginning of the transition period), during the 1989 the Government established the Yugoslav Capital Market, and in the 1992 its name was changed to BSE. Annual turnover on the BSE during the 1990s was insignificant, and at the beginning of 21st century there was a significant increase in trading, as a result of the sale of privatized companies' shares. In the technical sense, BSE got direct role in *privatization* of most companies.

At the beginning of the Serbian stock market prosperity (21st century), it was thought that there was a significant risk of future decline in shares trading after the privatization of the most successful companies. However, the volume of stock trading showed surprisingly positive tendencies until the political instability in relation to the elections in Serbia and the beginning of the global economic crisis in 2008, followed by a significant drop in trading volume and stock prices. Even the shares of most successful Serbian companies were sold in 2009 at the prices near or below the book value and a similar trend continued in 2010 and 2011.

Despite pronounced "fatalism" and public expectations of the global economy collapse, both in Serbia and worldwide, economic crisis and cyclic trends are not new phenomena. The first major economic boom has emerged in the 1920s, followed by a large increase in stock price of "high technology corporations": airline industry, film industry, radio stations etc. During 1928 it began "investment mania" in USA, when inexperienced or seasonal "wannabe" shareholders spend their entire savings, with the expectation that stock prices will indefinitely rise. However, in September 1929 it occurred a great stock market crash that had long-term impact on the overall world economy.

Cyclical trends in economy, with occasional dramatic disturbances, were also present in the final decades of the 20th century and at beginning of the 21st century. After "Black Monday" (the great "financial collapse" of the New York Stock Exchange from October 1987), in the following years began a period of economic growth, followed by a stock market "bubble", especially regarding to the share prices of high technology companies. Consequently, at the beginning of 21st century occurred global recession and a significant drop in stock prices. This brief historical view of the cyclical tendencies indicates that relatively lower intensity

economic crisis appear in almost every decade, with the occasional appearance of very pronounced global crisis, which became obvious in 2008 and in the following years.

Based on trends of the intensity and duration of previous global financial crises, it could be expected that in years to come will begin period of recovery and growth, followed by increase of the volume of trading on stock markets. Successful Serbian corporations, which will survive the current crisis, will than have a great chance to achieve higher stock prices and raise significant funds through primary shares issues. As the most important future shareholders, there can be distinguished *the institutional investors* and *the small shareholders* (individual investors). Their main reason for any investment in shares is achieving two forms of yields: capital gains and dividends. In the current circumstances, there are very limited possibilities of achieving capital gains from sale of shares, due to lack of demand and trade. The market value of most companies is often undervalued and even below the book value. As an alternative to capital gains remains the possibility of a regular dividends, which provide some security to shareholders, even if they are paid in modest amounts.

Theoretical considerations and practical importance of dividend policy

Starting from the existence of the inevitable decision makers' dilemma in every complex enterprise, "*how much of the created value to invest and how much to return to owners*", it is obvious that this dilemma must be solved on the basis of careful considerations. Dividend payments reduce the equity, but also the cash required for investments, which can directly affect the investment decisions. If cash is used for dividends, when there are profitable investments opportunities, the company will have to raise funds by the issuance of new shares or by borrowing. There are alternative methods of the value distribution to the shareholders, most notably the stock repurchase (or buyback) and stock dividends instead of cash dividends.

Corporations typically do not have a legal obligation to pay dividends on common stocks. On the other hand, in legal practice of most countries there are usually certain restrictions on dividend payments. The "net income rule" prohibits the payment of dividends that exceed the current net income and undistributed profits from previous years. The "rule of maintaining the invested capital" implies that the dividend payments should not reduce the initially invested capital. The "liquidity rule" prohibits illiquid companies to pay dividends.

The relevance of dividend policy has been the subject of numerous theoretical and practical considerations for several decades. According to traditional beliefs, *shareholders expect a dividend*, even if they are paid in very modest amounts. Dividends to some extent reduce the risk of share prices fall and the inability to achieve capital gains by selling them. This concept is illustrated by the idiom "*A bird in hand rather then two in bush*". In contrast to the potentially high capital gains, dividend yield is usually not higher than a few percent.

On the other hand, some managers and academic researchers jeopardize the relevance of dividend policy. Some of them even believe that this policy is irrelevant, which means that no matter how carefully dividend policy is established, there will be no impact on shareholder

value creation. At the beginning of 1960s, Miller and Modigliani created a *theory of dividend irrelevance*. They started from the premise of perfectly competitive capital market, characterized by an absence of tax differences, transaction and flotation costs, asymmetric information, etc. In these theoretical circumstances, the value of the company is indeed unrelated to dividend policy. Miller and Modigliani believed that investment policy is only important, because investments determine the future earning ability and income (Miller, Modigliani, 1961:414).

There are even third opinions, according to which *dividends undermines shareholder value*, primarily for two reasons: (1) due to the tax disadvantage of dividends relative to capital gains, (2) by dividend payments managers implicitly admit that they do not know how to use free cash funds - money used for dividend payments, should be invested in projects with positive net present value in order to create value for shareholders.

As the most important classification of dividend policy, viewed in terms of profit distribution, can be distinguished *an active and residual dividend policy*. If investment decisions are the most important, the dividends could be treated as pure residual: profit that remains after the financing of new investments could be used for dividend payments. If the investment opportunities exceed net profit, there will be no dividend payments. Such understanding is the essence of *pure "residual dividend theory"* Residual theory is mostly consistent with the business philosophy and interests of corporate managers. In this case, company with high growth rate and multiple investment opportunities should pay little or zero amounts of dividends, while successful and developed companies with limited number of profitable investment opportunities should pay large dividends (Zakić, 2005: 62).

According to the residual theory, the investment and financial decisions determine the market value of the company and have a greater importance than dividend decisions. A large number of companies worldwide, however, maintain a relatively stable amount of dividends per share. Dividends reflect future profitability of the company and their payments reduce risk and uncertainty that shareholders are exposed to. An *active dividend policy* means that companies will pay regular dividends, even if they exceed the amount of net profit "reserved" for investments. In that case, cash required for investments will be obtained on the capital market.

By analyzing the practice of developed countries, it can be noted that during the last decade of the 20th century there was a pronounced acceptance of residual dividend policy. Extremely successful business and the stock prices' rise of high technology companies during the 1990s led to decline in importance of dividends. The most successful companies in the IT field, such as Microsoft did not pay any dividend in this period. Profit was reinvested, leading to a steady rise in share prices. During the 1990s, in USA only one of five corporations paid dividends, in contrast to the 1950s when nine of ten companies paid dividends (Frankfurter et al., 2003: 75). Some economists even predicted the disappearance of dividends that are taxable. However, the beginning of 21st century was marked by recession and significant drop in stock prices, especially ones of the high technology companies. This led to the new popularization of active dividend policy. The potential loss that investors could suffer in the case of the stock

prices' decline, could be somewhat reduced by the amount received in dividends. In USA and other developed countries, usually once company begins to pay dividend, it accepts policy of paying *stable dividend* per share. Dividends will increase only if the managers are expecting that future profits will be high enough to cover a higher level of dividends. On the other hand, reduction or termination of dividend payment is something that companies tend to avoid and apply only when managers estimate that the current dividends are unsustainable on long term.

There are two basic forms of cash distribution to shareholders: (1) cash dividends and (2) stock repurchase. In the so-called quasi payments there are introduced the free distribution stocks and the dividend reinvestment plans (DRIP).

Cash dividends are traditional and most common form of cash distributions to the shareholders. Advantages of this form of payment are the following: (1) dividends send information about the good business results, which has a positive impact on share price, especially in the case of announcement of new or increased dividends; (2) dividends attract investors who prefer cash payments, according to the "bird in hand" argument; (3) dividends reduce agency costs that may emerge from the conflicts between managers and shareholders. Disadvantages of cash dividends are the following: (1) shareholders pay taxes on dividends, which are in most countries larger than the tax on capital gains, (2) dividend payments could cause "cash shortages" (3) reduction of regular dividend payments usually causes the share price fall.

The relevance of dividend policy differs from one country to another. Data from the four most developed countries for the 1975-1995 period show that the highest average dividend payout ratios had the United Kingdom and USA (Lease et al., 2000:137). Significantly lower dividend payout ratios had Japan and Germany. This ratio is associated with the dispersion of ownership. In the countries as Great Britain and USA, there is a wide dispersion of ownership in public corporations. As a result, the most conflicts can occur in relations between the "mighty" managers and small shareholders. Large dividend payments are seen as a way to reduce the cash amounts available to managers, who could use them in order to achieve their personal goals. Continental Europe and Japan are mostly characterized by concentrated ownership, which results in lower dividend payout ratio. However, in such conditions, the most significant conflicts could arise between the majority shareholders and the minority ones.

An alternative to cash dividends is distribution of cash to shareholders through the *stock repurchases* - common stocks are repurchased at a price higher than market value. In the last decade of the 20th century, in USA the stock repurchase even reached 40% of total payments to the shareholders (Shapiro, Balbirer, 2000:514). USA along with Canada and Great Britain are few countries in which the significant cash distribution to shareholders is made in this way. According to some studies, stock repurchase in the USA is often done as a mean to grant stock options to the managers (Pavlovic, Muminović, 2011: 268).

There are three main motives for using the stock repurchase: (1) *informational motive*, (2) *defense against hostile takeover* and (3) *the tax motive*. In the early periods of repurchase, which began in the 1950s, the reason for the stock repurchase was to overcome

the undervaluation of stocks by the market. Repurchase (at the price that exceeds the market price) was understood as a positive signal that emphasized a successful business performance, which contributed to the share price rise. Informational motive is particularly significant during *the stock market crisis*, when managers try to minimize the consequences of the situation colloquially called "stampede" or "avalanche effect". The company shares' price, in these conditions, rapidly falls due to the panic reaction of shareholders, who quickly sell their shares. Repurchase, at a price higher than the market, could partially prevent the fall in share prices, but long-term effects mainly depend on the intensity of the market crisis and degree of shareholders confidence into the company. Unlike a regular increase in dividend payments, the stock repurchase does not produce pressure of maintaining a higher level of payments to shareholders.

In addition to the information motive, a significant number of repurchases are associated with "defensive maneuvers", taken in order to avoid hostile takeover. In USA that is often referred as "*greenmail*"[4]. In this case, "coalition" of top managers and majority or controlling interest shareholders want to "get rid of" the group of undesirable and influential shareholders, who represent a threat to them. By "blackmail" payments, company also reduces the amount of free cash, which could be one of the reasons for the takeover.

The tax motive is a very important reason for the alternative cash distribution to shareholders. In most countries there are *tax disadvantages of dividends* in relation to the capital gains. Capital gains are often exempted from taxation and that is common for the long-term capital gains realized by individual investors.

Dividend policy of the food industry companies

Substantial geostrategic changes in the world, accompanied by economic and political turmoil, have caused abrupt increase in food and energy prices in the last decade. This resulted in a dramatic increase in the role and the perspective of the food industry. (Milanović et al., 2011: 549-550).

As a specific effect of the economic crisis in Serbia, there could be distinguished considerable interest in traditionally neglected sector of agriculture, both in economic experts' discussion and in daily political debates. According to preliminary data of the Serbian Chamber of Commerce, agriculture and food industry achieved in 2011 a foreign trade surplus of about $ 1.5 billion, which is about 60 percent more than in 2010. The surplus in foreign trade of agricultural and food products in the period January-November 2011, had a growth of 29.7 percent and amounted to $ 1.4 billion, while the rate of import coverage by export was 227.9 percent. For 11 months of 2011 agrarian exports amounted to $ 2.4 billion, which was higher by 23.9 percent than in the same period of 2010, with the share in total goods exports of 22.6 percent. At the same time, the value of agricultural imports was $ 1.06 billion that is by 17.1 percent higher in the same period of 2010, with the share in total goods import by

4 Green represents dollar currency color, and greenmail is named after blackmail.

5.9 percent[5]. However, exports of agricultural and food products are largely related to just a few products (cereals, sugar and raspberries), indicating that there are significant untapped opportunities for improvement of the export performances not only in volume, but even more in the structure, where the products of the higher processing stages should have more significant position than it is the case now.

In the conditions of limited own resources, expensive credits and insufficient governmental subsidies, as very important source of financing agricultural corporations it appears the primary stocks' issue. It could be raised a question: W*ho could be interested to buy these shares*"? The most important target groups are institutional investors such as mutual (investment) funds, insurance companies, private pension funds, etc. Institutional investors invest their funds in the portfolio of "safe" securities of various companies (including securities issued by the state), which are expected to exercise appropriate portfolio performance and yields. If those investors do not intend to sell corporate stocks, the only yield they could get is dividend. This suggests that *dividend policy is extremely important for the companies seeking to attract institutional investors*. In addition, regular dividend payments, even in modest amounts, provide some security to the "traditionally distrustful" small shareholders (individual investors).

Given the importance of the agri-food sector for the economic development of Serbia, this research aims to analyze the opportunities and to provide guidelines in formulating the appropriate dividend policy of the relevant domestic corporations. Research in this study includes 10 representative companies in Serbia. The sample was chosen according to following criteria: (1) shares of corporation are usually traded on day to day basis (continuous trading method on Belgrade Stock Exchange); (2) corporation belongs to the group of large or medium size enterprises; (3) during the period 2006-2010 corporation reported net profit in at least 4 annual income statements (which is a basic prerequisite for the payment of dividends).

These are the following companies:

- Bambi Banat a.d., Beograd
- Soko Štark a.d., Beograd
- Frikom a.d., Beograd
- Imlek a.d., Beograd
- Mlekara Šabac a.d., Šabac
- Sojaprotein a.d., Bečej.
- Karneks a.d., Vrbas
- Vital a.d., Vrbas
- Dijamant a.d., Zrenjanin
- Danubius a.d., Novi Sad

5 Data source: Statement of advisor in Serbian Chamber of Commerce Vojislav Stanković, Agencija Beta, article „Suficit u razmeni agrara 1,5 milijardi dolara", http://www.beta.co.rs/default.asp?tip=article&kategorija=ekonomija&ida=2630921&id=2213981&ime=Vranje (available on 4th January 2012).

In this paper following hypotheses have been tested: (1) corporations should maintain a stable level of dividends and increase them only if they can maintain a long-term higher level; (2) acceptance of stable dividend payments leads to the creation of confidence among existing shareholders as well as the new minority ones; (3) cash dividends in the countries in transition are important to market value and business reputation of corporations and could have even more powerful impact than in developed countries.

As the first step in the dividend policy analysis of the above mentioned companies, it is necessary to start from the amount of *gross dividend per share* for the 2006-2010 period (Table 1). It may be noted that out of 10 analyzed corporations, four of them did not pay any dividend (Soko Štark, Sojaprotein, Karneks and Vital), four companies have paid dividends for one year or more (Bambi, Frikom, Mlekara Šabac and Dijamant), while only two companies regularly paid annual dividends (Imlek and Danubius).

Table 1. Gross dividends per share (2006-2010) - in RSD

Corporation	Gross dividend per share for year				
	2006	**2007**	**2008**	**2009**	**2010**
Bambi	120	127.11	-	-	1260
Soko Štark	**	-	-	-	-
Frikom	228	606	550	-	-
Imlek*	n/a	n/a	53	66	81.66
Mlekara Šabac	385.48	-	-	-	-
Sojaprotein	-	-	-	-	-
Karneks	-	-	-	-	-
Vital	-	-	-	-	-
Dijamant	180	184	-	-	-
Danubius	53.45	70.94	36.25	12.38	63.52

Source: Individual annual stock market reports for each company, taken from the website of the BSE (www.belex.rs)

* Data on dividends for 2006 and 2007 were not available.

** Corporation was not listed in BSE in 2006.

As it was previously pointed out, the corporations worldwide usually have no legal obligation to pay dividends on common shares, which is the situation in Serbia as well. In legal practice of most countries there are certain limitations for the dividend payments, i.e. "net profit rule" prohibits payments of dividends that exceed the net profit in current year and undistributed profits from previous years. In that sense, the next step in the dividend policy analysis is to examine the financial results of analyzed corporations for the previous periods (Table 2).

It may be noted that companies have shown positive financial results, both in the period before the economic crisis, and after 2008. This indicates that most companies have primarily adopted residual dividend policy, which means reinvestment of all profit or the most of the profit. On the other hand, there is one example of active dividend policy - "Imlek" increased amount of dividends per share in period of 2008-2010. Since 2008

"Imlek" has also used significant funds for stock repurchase, which can be interpreted by already discussed "informational motive". Due to economic and stock market crises, repurchase was a mean to prevent further decline of stock prices. In January 2012 it was announced extraordinary shareholder assembly, on which a dividend payment decision is expected. In this regard, it is important to pay attention to a decision made by "Bambi" (which has the same majority shareholder as "Imlek"), to pay to the shareholders the most of the profit for 2010 (over € 4 million for dividends, i.e. 1,260 dinars per share). These changes in dividend policy can be explained by expected sales of companies operating within the "Salford" investment fund.

Table 2. Net Profit (2006-2010)

Corporation	Net Profit (in 000 dinars)				
	2006	2007	2008	2009	2010
Bambi	244,092	174,630	24,906	200,810	556,003
Soko Štark	689,895	800,134	625,561	621,241	526,696
Frikom	706,901	857,276	684,820	366,193	198,520
Imlek	-91,579	413,261	900,889	867,815	1,155,535
Mlekara Šabac	316,293	250,529	254,976	311,051	359,189
Sojaprotein	661,828	1,253,434	407,103	488,229	792,014
Karneks	120,979	477,119	587,423	176,970	237,764
Vital	150,970	181,341	569,790	30,520	442,312
Dijamant	1,050,170	263,446	1,053,472	458,610	341,804
Danubius	99,874	129,078	92,189	22,529	115,368

Source: Individual annual stock market reports for companies (2008-2010) and financial reports in 2007 (for the 2006-2007 period), taken from the website of the BSE (www.belex.rs)

Instead of increasing the cash dividends, the company may *issue new shares* in proportion to the number of shares already owned. The usual motive for stock dividends is to avoid cash payments. This distribution method was applied by "Sojaprotein" several times. According to theoretical concepts, based on conditions of "perfect market", each increase in the number of shares should result in proportional decline in their prices, because the same company value is divided in more peaces. In practice, however, this "maneuver" usually does not result in stock price fall, if that company has credibility in the stock market.

Starting from the most developed countries' experience, it is indisputable that the dividend policy is associated with dispersion of ownership in corporations. Corporations in countries with significant concentration of ownership, such as Germany and Japan, distribute smaller amounts of net profit for dividends. On the other hand, corporations in the USA and Great Britain usually have dispersion of ownership. Consequently, large portion of their net profit is distributed to shareholders in the form of dividends or stock repurchases (Zakić, 2005:117-125). Serbia has a very pronounced concentration of ownership in the corporations in food industry (Table 3), which has significantly influenced the acceptance of residual dividend policy.

Two corporations (Mlekara Šabac i Karneks) are marked by total concentration of ownership. The average concentration of ownership is 80.3%, including one owner or group of obviously related companies. It is certain that this percentage would be even higher if there were public information regarding the connection of majority shareholders with some of minority shareholders - individuals or companies registered under their name or it they are "hidden" within the custody bank accounts.

Table 3. Percentage of shares owned by majority shareholder or related shareholder groups (January 2012)

Corporation	Majority owner/related group	Share owned (rounded in %)
Bambi	Danube Foods Group*	69.6
Soko Štark	Grand kafa	70.6
Frikom	Agrokor	95.8
Imlek**	Danube Foods Group	78.7
Mlekara Šabac	Miroslav Bogićević, Koncern Farmakom	100.0
Sojaprotein	Victoria Group	62.9
Karneks	Carnex holdings, Ashmore Carnex Limited, MK Group	100.0
Vital	Invej	68.5
Dijamant	Agrokor, South East EI Fund	73.1
Danubius	Delta Agrar doo, Delta Real Estate doo	84.5
Average		80.3

Source: Centralni registar hartija od vrednosti (Data relevance: 20th January 2012 - www.crhov.rs)
*Salford
** Beside common shares, Imlek issued in 2008 the small number of preferred shares without voting rights, that are not included in calculation.

Total or significant profit reinvestment, viewed from the aspect of "unrelated" or "real" small shareholders, can be positive only if the corporation achieves constant share price growth, which allows capital gains. In Serbia, however, even by the end of 2007 and especially at the beginning of 2008 there was a significant fall in turnover and market value of corporations listed on the BSE, as a result of the crisis at all stock markets in the world as well as the domestic political instability. The crisis is evident in 2012 and it could last. In these conditions, one cannot expect a significant increase in stock prices, which discourages investment by small shareholders. Also, it is debatable whether majority owners actually reinvest the profits in the company or are they trying to achieve certain "private benefits" (transfer of money through related companies, high compensation for members of governing boards, buying luxury real estate, cars, etc.).

Guidelines for formulation of an effective dividend policy

Based on the presented theoretical assumptions and practical evidence, there could be formed certain guidelines for formulation of an effective dividend policy. Those guidelines are applicable to companies that operate in developed countries, but in transition countries as well. In determination of dividend policy, managers and major owners should consider the following:

- The phase of growth and development of companies, i.e. possibility of investment and borrowing;
- The business risk and potential illiquidity;
- The owners tax structure (related to dividend taxation of significant shareholder groups);
- Possibility of increasing stock trade volume by attracting certain groups of shareholders and thus creating opportunities for new share issue.

Companies in *the initial stages of growth* have large financial requirements for financing investments and usually would not pay dividends. *Developed and successful companies* with low growth rate usually are highly liquid and should pay large dividends. As an important factor, it is necessary to consider *the possibility of raising additional capital*. If the company is unable to obtain capital needed for investments by issuing new shares or by borrowing at acceptable costs, then it should be restricted the dividend payments. It is also necessary to consider the consequences of borrowing, which increases the business risk. Investments funding and dividends should be planed and coordinated on long-term bases, because any reduction or suspension of dividend payments usually has a negative effect on share price.

The regular business conditions of each company could be interrupted by temporary difficulties. Companies with volatile profits and cash flows should set a lower dividend payout ratio, in order to avoid payments restrictions due to illiquidity.

In the most countries there are *tax disadvantages of dividends in* relation to the capital gains. Capital gains are often exempted from taxation, which is common for the long-term capital gains realized by individuals. From the perspective of companies and individual investors, dividends are also subjected to double taxation: in contrast to the interest payments, dividends are not deductible from company taxable income and the shareholders pay taxes on dividends (or they receive only the net dividends). When creating dividend policy, companies should consider the dividend preferences of the most important shareholders groups.

Finally, dividend policy could have a major impact on attracting of the small shareholders. These shareholders are primarily interested in achieving yield and usually do not exercise their right to vote at shareholder meetings (depending on the company, the limit for direct participation in the shareholders' meeting is set relatively high, and shareholders who have limited number of shares can only delegate their rights to the voting representative). If a corporation can not achieve share price growth, the only yield for small shareholders is dividend. The absence of dividend payments discourages small shareholders to retain and continue to invest in company shares.

Based on research results presented in this paper, it can be concluded that in Serbia *the majority owners use their dominant position*, and often do not leave even a small "piece of cake" to minority shareholders. However, if this discrepancy continues, the small shareholders will "disappear", and those companies will essentially or legally be transformed into the form of private corporations.

Significant changes in dividend policy could only be expected due to the increased presence and influence of *the institutional investors* such as mutual (investment) funds, pension funds and insurance companies. These investors expect a stable and adequate rate of return on their investments. Although institutional investors usually do not held in their portfolio more than a few percent of the shares of individual companies, they should not be marked by the common term "small shareholders". Institutional investors own substantial financial assets managed by professional portfolio managers, who are able to protect their interests much better than the small shareholders.

Starting from the experience of developed countries, it is evident that during the 1990s and 2000s institutional investors had a profound influence on changing of corporate goals in countries with significant concentration of ownership, such as Germany and Japan. Companies that seek to attract these investors must accept *the value creation for all shareholders* as one of the most important goals, but not just for the majority ones. That means an implementation of active dividend policy and stable dividend payments to the level that is sustainable on the long term.

By attracting institutional investors and restoring the trust of small shareholders, successful companies in Serbia can consequently achieve long term share price growth, which will enable them to issue new shares. Raising equity or borrowing (bonds issue) from a broad range of minority investors who are primarily interested in capital gains, dividend or interest payments could be achieved under more favorable conditions, compared to traditional bank loans.

In the circumstances of the global and regional economic crisis, most domestic corporations are focused on survival and all significant investments are pending. However, even in these conditions, there are companies that are trying to take full advantage of the long-term financing by issuing securities. As a leader in this field, it can cited that "Tigar" from Pirot, which has issued the new shares during the stock market boom, and later during the economic crisis, has raised significant funds by selling bonds to the large institutional investors (Dunav osiguranje, DDOR, Viner osiguranje, Komercijalna banka etc.). By public and detailed presentation of its business and development plans ("Tigar" has achieved a large growth in sales and exports), it managed in 2010 to attract significant institutional investors and to sell successfully the first issue of the long-term bonds. "Tigar" example indicates that even in time of recession, economic crisis and absence of the small investors, successful corporations could raise significant funds in the long-term securities market, but only if their business plans provide credible guarantees to the institutional investors (Zakić et al., 2011:744-745).

Starting from the outstanding perspectives of agricultural and food industry sector in Serbia, it could be concluded that there is a great interest of institutional investors for potential investments in this area. Active dividend policy and stable payments are one of essential prerequisites for increase of trade on the secondary market and thus for the future issues of new shares.

Conclusion

When the experience of developed countries is applied onto the corporations in transition countries, it could be concluded that an acceptance of stable dividend payments could lead to the creation of confidence of existing shareholders as well as the new minority ones. Consequently, companies can raise additional capital needed for survival and further growth. The successful public corporation, which plans to issue new shares, needs to start stable dividend payments, at a level that is sustainable on long term. Worldwide, cash dividends represent authentic form of communication between the majority owners and managers, on one side, and minority shareholders, on the other side. By stable dividend payments and gradual, long-term sustainable increase, corporations send viable signal of success in performance, which leads to the share price growth.

Instead of the usual annual payments, public corporations in Serbia should consider the possibility of applying American model of quarterly or semiannual payments, which could better and faster show current and potential shareholders' intention to pay stable dividends. Companies should also publicly disclose the manner in which they form the dividend policy and present detailed plans for profit reinvestments, thereby substantially eliminating doubt that the majority owners exercise "private benefits".

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ZNAČAJ POLITIKE DIVIDENDI ZA PREDUZEĆA PREHRAMBENE INDUSTRIJE U SRBIJI

Vladimir Zakić[6], Zorica Vasiljević[7], Vlade Zarić[8]

Rezime

Predmet istraživanja u ovom radu je analiza politike dividendi deset reprezentativnih preduzeća prehrambene industrije. U uslovima ograničenih i skupih izvora finansiranja, kao veoma značajna alternativa zaduživanju ističe se primarno tržište akcija. U praksi domaćih korporativnih preduzeća, međutim, emitovanje novih akcija predstavlja retku pojavu. Veoma značajan faktor budućeg razvoja primarnog tržišta akcija predstavlja povećanje obima trgovanja na trenutno uspavanom sekundarnom tržištu. Nedostatak tražnje i pad obima trgovanja onemogućava rast cena akcija, a time i mogućnost ostvarenja kapitalne dobiti od njihove prodaje. U takvim uslovima, osnovni razlog ulaganja u akcije može biti prinos po osnovu dividendi. Cilj ovog rada jeste da analizira mogućnosti i pruži smernice prilikom formulisanja efektivne politike dividendi u funkciji privlačenja određenih grupa akcionara, među kojima se kao najznačajniji mogu izdvojiti institucionalni investitori.

***Ključne reči**: politika dividendi, korporativna preduzeća, prehrambena industrija, institucionalni investitori.*

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ZAKLJUČCI SA MEĐUNARODNOG NAUČNOG SKUPA:

„ODRŽIVA POLJOPRIVREDA I RURALNI RAZVOJ U FUNKCIJI OSTVARIVANJA STRATEŠKIH CILJEVA REPUBLIKE SRBIJE U OKVIRU DUNAVSKOG REGIONA - očuvanje ruralnih vrednosti“,

održanog u periodu od 06. do 08. decembra 2012. godine u hotelu „Omorika“, Tara

Ovaj Međunarodni naučni skup predstavlja rezultate istraživanja, pre svega[1], na projektu *III - 46006 „Održiva poljoprivreda i ruralni razvoj u funkciji ostvarivanja strateških ciljeva Republike Srbije u okviru dunavskog regiona“* finansiranog od strane Ministarstva prosvete, nauke i tehnološkog razvoja Republike Srbije. Osnovna svrha ovog skupa ogleda se u očuvanja ruralnih vrednosti, što predstavlja značajan razvojni potencijal lokalnih zajednica.

Uz prisustvo velikog broja gostiju iz Srbije i inostranstva, naučni skup je otvoren pozdravnim govorom prof. dr Draga Cvijanovića, direktora Instituta, koji se prisutnima obratio sa čestitkama i zahvalnošću što su svojim dolaskom uveličali Skup i poželeo im uspešan rad.

Pozdravnu reč uputili su: u ime Novosadkog Univerziteta, prof. dr Radovan Pejanović, prorektor; u ime Megatrend Univerziteta skup je pozdravio prof. dr Milan Milanović; u ime Ekonomskog fakulteta iz Subotice skup je pozdravio prof. dr Stanislav Zekić; u ime Privredne komore Srbije skup je pozdravila dr Danica Mićanović; u ime Fakulteta za Biofarming skup je pozdravila prof. dr Gorica Cvijanović; u ime Instituta za primenu nauke u poljoprivredi skup je pozdravio mr Vedran Tomić; u ime Akademije ekonomskih nauka iz Bukurešta, skup je pozdravila prof. dr Raluca Andreea Ion; u ime Petroleum i Gas Univerziteta iz Ploeštija, skup je pozdravila prof. dr Mariana Eftimie, Dekan Fakulteta Ekonomskih nauka.

1 Osim radova koji su rezultat istraživanja na ovom Projektu bilo je i radova koji su rezultat istraživanja na ostalim projektima finansiranim od strane Ministarstva prosvete, nauke i tehnološkog razvoja Republike Srbije.

Prvog dana skupa, osim otvaranja i pozdravnih reči, bila su tri uvodna predavanja i to:

Radovan Pejanović, Gordana Radović: RURAL TOURISM AS A FACTOR OF RURAL ECONOMY DIVERSIFICATION IN THE REPUBLIC OF SERBIA

Ion Raluca Andreea, Dan Popescu Cristian: ANALYSIS OF SOUTH-MUNTENIA REGION, ROMANIA, WITHIN THE WIDER FRAMEWORK OF REGIONAL DEVELOPMENT

Andrew F. Fieldsend, Gyula Vasvári: SOME ENTREPRENEURS' SUCCESS STORIES FROM THE NORTH GREAT PLAIN REGION OF HUNGARY

Skup je bio podeljen na tri tematske sekcije, na kojima su radove prezentovali moderatori: *Radojica Sarić, Bojana Bekić, Velibor Potrebić, Marijana Jovanović, Zoran Simonović i Marko Jeločnik*. Kroz 3 tematske sekcije skupa, obuhvaćeno je ukupno 91 rad, i to:

1. *Održivi razvoj kao savremeni razvojni pristup u očuvanju agrara i ruralnih vrednosti sa 41 radom*,
2. *Strateško planiranje i institucionalno-politička dimenzija agrarnog i ruralnog razvoja sa 14 radova*,
3. *Agrobiznis ruralnih područja, diversifikacija i komparativne prednosti ruralne ekonomije sa 36 radova*.

Iz obilja podataka koje su nam prezentovali autori iz raznih zemalja u svojim radovima (ukupno 176 autora iz 7 zemalja) proizilaze sledeći zaključci:

1. Održivi razvoj poljoprivrede lokalnih zajednica predstavlja okosnicu razvoja celokupnih regiona u uslovima svetske ekonomske krize. Aktuelna pitanja i izazovi u proizvodnji zdravstveno–bezbedne hrane za ljudsku i animalnu konzumaciju, upotreba biomase za proizvodnju energije, racionalno iskorišćavanje prirodnih resursa (zemljišta, voda i vazduha), klimatske promene i zaštitu životne sredine, osobenosti su koje karakterišu lokalne zajednice i kojima se može postići ravnomerniji razvoj na lokalnom nivou, uz primenu zakonskih akata i vođenja sigurnije politike za poljoprivredne proizvođače.
2. Kroz primenu postulata održivog ruralnog razvoj može se povući paralela među lokalnim zajednicama, kod kojih je zaključeno da postoje sličnosti i razlike u načinu razvitka, odnosno u preprekama na koje nailaze.
3. Istaknuta je neophodnost da se izvrši primena strateškog planiranja i da se kroz model institucionalne i političke sfere pomogne očuvanju ruralnih vrednosti agrara.
4. Poseban osvrt napravljen je po pitanju migracije i rapidnog opadanja broja stanovnika u ruralnim sredinama, kako se ovaj problem može rešiti posmatranjem odnosa ponude i tražnje na tržištu rada, stvaranjem uslova za započinjanje privatnih biznisa kako na nivou Republike Srbije, već i u zemljama u okruženju.

5. Ukazano je na značaj diversifikacije agrobiznisa u ruralnim područjima s aspekta stvaranja mogućnosti obezbeđivanja opstanka malih proizvođača na tržištu, stabilnosti prodaje i prihoda, efikasnije korišćenja materijalnih i ljudskih resursa, kao i prilagođavanja novim, izmenjenim potrebama kupaca.
6. U okviru koncepta ruralnog razvoja i multifunkcionalne poljoprivrede posebno mesto i ulogu zauzima agroturizam. Reč je o resursu koji se oslanja na kombinaciju kvalitetne hrane i izuzetnih prirodnih lepota Republike Srbije, koji može da postane faktor diverzifikacije ruralne ekonomije u lokalnim zajednicama. Za to je potrebna značajna podrška države, ali i ostalih institucija društva (obrazovnih, istraživačkih, ekoloških).

Drugog dana održavanja skupa održano je redovno zasedanje Skupštine NAUČNOG DRUŠTVA AGRARNIH EKONOMISTA BALKANA, na kome je osim predstavljanja publikovanih izdanja Instituta za ekonomiku poljoprivrede, održan i Okrugli sto pod nazivom **Doprinos razvoja lokalnih zajednica dunavskog regiona diversifikaciji ruralnih vrednosti**, koji je izazvao veliko interesovanje prisutih gostiju i pokrenuo veoma interesantnu diskusiju, na osnovu kojih je potvrđena uspešnost Skupa.

Beograd, decembra 2012. godine

Prof. dr Drago Cvijanović
Doc. dr Jonel Subić
Prof. dr Radovan Pejanović

Prikaz monografije

LAVIRINTI MENADŽMENTA

Autori:
Prof. dr Vidoje Stefanović, Prof. dr Drago Cvijanović,
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Izdavač:
Institut za ekonomiku poljoprivrede, Beograd, 2012

Urednik:
Prof. dr Drago Cvijanović, direktor

Monografija „Lavirinti menadžmenta“ pruža kompletan profil menadžmenta (naučne discipline) i menadžera (nosioca menadžmenta kao sistema vlasti) i sugeriše njihove aktivnosti u funkciji održivog ekonomskog razvoja. U vremenu svetske globalizacije funkcija menadžmenta zauzima značajno mesto. Nužnost i važnost menadžmenta i menadžera obrazložena je prema poglavljima: definisanje, funkcije i vrste menadžmenta; analiziranje procesa i oblasti menadžmenta; karakteristike, profil, priprema, motivacija i razvoj karijere menadžera; poslovni moral i zdravlje menadžera. Izvestan broj stranica posvećen je pitanju da li žena treba da se iskazuje u poslovnoj karijeri odnosno menadžmentu? Osim pomenutih oblasti, analizirani su i: preduzetnički i strategijski menadžment; marketing strategije u funkciji održive konkurentske prednosti; menadžment promenama i inovacijama, kvalitetom, tehnološkim razvojem, projektima, istraživanjem i razvojem, regionalnim razvojem, krizom; menadžment istraživanjem i razvojem i stvaranje konkurentnosti preduzeća. Imajući u vidu kompleksnost monografije, ističe se njena značajnost u daljoj afirmaciji procesa upravljanja. Monografija je na raspolaganju svim stručnim licima: privrednicima, preduzetnicima, menadžerima, kao i onima koji se prvi put odlučuju na pokretanje sopstvenog biznisa.

Monografija je predstavljena na četiristotineosamdesetosam strana i korišćeno je dvestadvadesetosam izvora podataka. Sadržinu monografije čine dvadesetdve oblasti, pri čemu svaka čini zaokruženu celinu i doprinosi sticanju globalne slike o značajnosti menadžmenta u svim vidovima privrednih društava, kako u vremenu nastanka, tako i u sadašnjem periodu. Pojedine oblasti na svojstven način ukazuju na obaveznost ponašanja menadžera kao nosioca sistema upravljanja, posmatrano kroz: poslovni moral, zdravlje i snage menadžera, komuniciranje i konflikata u okruženju.

Značaj predmeta istraživanja u ovoj monografiji doprinosi lakšem razumevanju menadžmenta u globalizaciji i ponašanju menadžera u kriznim i konfliktnim situacijama. Autori na svojstven način definišu i pojedine vidove globalizacije: politička globalizacija, globalizacija kao kulturni proces i efekti globalizacije. Oblast menadžmenta usmerena regionalnom razvoju tumačena je kroz razvojnu politiku i ekonomske aspekte u regionalnom razvoju, uz naglašavanje regionalnog razvoja Srbije. Poslovi i zadaci koje obavljaju menadžeri svode se na pet osnovnih komponenti menadžment procesa – planiranje, organizovanje, kadrovsku politiku, rukovođenje i kontrolu. Autori ističu da će preduzeće od menadžera tražiti još veća znanja i veštine nego do sada, kako bi se održalo u konkurentnijim i turbulentnijim uslovima privređivanja, što indirektno ukazuje na značaj menadžera u savremenim preduzećima i poslovnim subjektima. Autori ističu da je neizostavno posedovanje znanja i ličnih veština menadžera, pri čemu se izdvajaju: tehnička znanja i veštine, znanja i veštine u ophođenju s ljudima i konceptualna znanja i veštine. Svaka karakteristika menadžera koja odudara od definisanih podvodi se pod fatalnom greškom menadžera.

U okviru oblasti upravljanja poslovnim procesom u oblikovanju kvalitetnih usluga autori ističu nekoliko bitnih činjenica: definisanje kvaliteta, definisanje aktivnosti kojima se obezbeđuje kvalitetna usluga i uključivanje svih zaposlenih u osiguranje kvaliteta usluge, uz posebno angažovanje rukovodioca uslužne celine. Oblast menadžment tehnološkim razvojem ističe razvoj tehnologije kao jedan od ključnih pokretača ekonomskog razvoja i rasta, odnosno menadžeri su uvideli da je razvoj teže ostvariti u nedostatku novih tehnologija. U okviru oblasti menadžment projektima autori ukazuju na značaj primene tehnike mrežnog planiranja kao način upravljanja projektima koji se sastoje od velikog broja aktivnosti.

Autori monografije ističu značaj povezanosti menadžmenta i menadžera u zaokružen sistem poslovanja, u kome se sve veći značaj pridaje daljem razvoju veština, stavova i znanja koji su neophodni za efiksano nadmetanje na domaćim i inostranim tržištima. Istovremeno, potreba menadžera da se usavršavaju u svim veštinama nastaje kao rezultat pritisaka iz okruženja i utiču na firme svih veličina. Uspešno izlaganje autora o aktuelnim problemima u sistemu menadžmenta doprinosi svakom čitaocu (stručnjaku i početniku) lakše savladavanje prepreka ka ostvarenju cilja svakog preduzeća tj. ekspanziji.

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ZAPISNIK

sa V (pete) sednice Skupštine NAUČNOG DRUŠTVA AGRARNIH EKONOMISTA BALKANA (NDAEB)

održane 08.12.2012. god. na Tari

Na Skupštini NDAEB bilo je prisutno 48 članova

Sednicu Skupštine NDAEB je otvorio predsednik Društva prof. dr Radovan Pejanović koji je predložio sledeći:

D N E V N I R E D:

1. Izbor radnih tela skupštine (radnog predsedništva, zapisničara i overača zapisnika).
2. Izveštaj o radu NDAEB u 2012. god. i plan aktivnosti NDAEB za 2013. god.
3. Razno

Ad-1.

1.1. Za članove radnog predsedništva Skupštine NDAEB, predloženi su:

Prof. dr Radovan Pejanović
Prof. dr Drago Cvijanović
Prof. dr Stanislav Zekić
Prof. dr Žaklina Stojanović
Mr Vedran Tomić

1.2. Za zapisničare Skupštine NDAEB, predloženi su:

- *Marijana Jovanović i*
- *Bojana Bekić*

1.3. Za overivače zapisnika Skupštine NDAEB, predloženi su:

- *Dr Gordana Dozet i*
- *Dr Rade Popović.*

Ad-2.

2.1. Izveštaj o radu NDAEB u 2012. godini

Predsednik Naučnog društva agrarnih ekonomista Balkana prof. dr Radovan Pejanović podneo je izveštaj o radu Društva.

U toku 2012. god., urađeno je sledeće:

1. U APR-u izvršena je zamena lica koje zastupa NDAEB, odnosno umesto dosadašnjeg predsednika prof. dr Draga Cvijanovića, upisan je prof. dr Radovan Pejanović, predsednik NDAEB, koji je izabran na Skupštini NDAEB 01.12.2011,

2. U banci (Agrobanka, a potom Banka Poštanska Štedionica), izvršena je promena ovlašćenih lica za potpis, umesto dosadašnjeg predsednika prof.dr Draga Cvijanovića i glavnog i odgovornog urednika časopisa Ekonomika poljoprivrede prof. dr Milana Milanovića, sada su za potpis dokumenata u banci ovlašćeni prof. dr Radovan Pejanović, predsednik NDAEB i prof. dr Drago Cvijanović, glavni i odgovorni urednik časopisa Ekonomika poljoprivrede,
3. Zbog promene Zakona, Ministarstvo prosvete, nauke i tehnološkog razvoja Vlade Republike Srbije, naložilo je otvaranje računa u trezoru za NDAEB, što je i učinjeno,
4. Urađen je sajt Naučnog društva agrarnih ekonomista Balkana: http://bsaae.bg.ac.rs/
5. Časopis Ekonomika poljoprivrede je i dalje na nivou međunarodnog časopisa M-24, s tim, da je prvi broj iz 2012. godine bio na jednoj bazi podataka, drugi broj na dve a treći broj je upisan na šest baza podataka i to: **EBSCO, AgEcon Search, Index Copernicus Journals Master List, Social Science Research Network (SSRN), ProQuest** i **Ulrch's Periodicals Directory.**
6. Časopis „Ekonomika poljoprivrede" je redizajniran, urađen je zaštitni znak časopisa, upisan je u CIP katalogizaciju,
7. u 2012. godini, (do sada) objavljeno je 3 (tri) redovna broja časopisa „Ekonomika poljoprivrede", četvrti redovni broj je u pripremi, a i objavljen je 1 (jedan) specijalni broj sa skupa iz Bukurešta „Agro-food and rural economy competitiveness in terms of global crisis", koji je održan 23-24. septembra 2011. godine,
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9. NDAEB je bio suorganizator nekoliko međunarodnih naučnih skupova i to:
   - *The 3rd International Scientific Conference "CAPITALISM IN TRANSITION", 15.06.2012., Hotel Crystal, Belgrade;*
   - *The 3rd International Symposium „Agrarian Economy and Rural Development – realities and perspectives for Romania", October 11-13,2012, Bucharest, Romania;*
   - *Treći međunarodni naučni simpozijum "Agrosym Jahorina 2012", 15-18. novembra 2012. godine, Jahorina, Republika Srpska;*
   - *"1st International symposium on animal science", 08-10. novembra 2012. godine, Zemun, Srbija;*
   - *Međunarodni naučni skup „Održiva poljoprivreda i ruralni razvoj u funkciji ostvarivanja strateških ciljeva Republike Srbije u okviru dunavskog regiona – očuvanje ruralni vrednosti -" , 06-08. decembra 2012. godine, Tara, Srbija.*

Istaknuto je, da je u 2013. godini, 60 godina postojanja časopisa „Ekonomika poljoprivrede", što bi trebalo da se promoviše adekvatnim aktivnostima. Mogući način promovisanja je i organizovanje skupa u prvoj polovini naredne godine, kada bi se

iskoristila mogućnost prezentovanja bibliografije časopisa „Ekonomika poljoprivrede“ za proteklih 60 godina rada, urađene specijalno za taj svečani događaj. Bibliografiju časopisa „Ekonomika poljoprivrede“ i sačuvane brojeve časopisa proslediti Arhivu Srbije i svim relevantnim institucijama u Republici Srbiji.

Takođe, prisutni članovi NDAEB, ukazali su na neophodnost priznavanja radova iz oblasti biotehničkih nauka, a objavljenih u časopisu „Ekonomika poljoprivrede“, i u tu svrhu veće angažovanje predsedništva Društva kod matičnog odbora za nauku.

2.2. Plan rada za 2013. godinu

- *Proslava 60 godina izlaženja časopisa „Ekonomika poljoprivrede“ sa jednodnevnim ili dvodnevnim naučnim skupom koji bi bio organizovan tim povodom,*
- *Da se po potrebi, a ugranicama finansijskih sredstava, održavaju sastanci Predsedništva NDAEB,*
- *Za hitne odluke, važiće mogućnost donošenja odluka telefonski ili E-mejlom, što će biti potvrđeno na prvom narednom sastanku Predsedništva NDAEB,*
- *Četiri redovna broja časopisa EP izdati na engleskom (pokušati izaći na SCI listu),*
- *Jačanje naučne uticajnosti časopisa,*
- *Dalje izdavanje monografija.*

Izveštaj i plan rada su usvojeni jednoglasno.

Ad-3. Razno.

Nije bilo diskusije.

U Beogradu, decembra 2012.godine

Zapisničari:

Marijana Jovanović_____

Bojana Bekić_____

Overivači zapisnika:

Dr Gordana Dozet_____

Dr Rade Popović_____

INSTRUCTIONS TO AUTHORS

The **ECONOMICS OF AGRICULTURE** (Ekonomika poljoprivrede) is an international scientific journal, published quarterly by BSAAE (Balkan Scientific Association of Agricultural Economists) in cooperation with Institute of Agricultural Economics (IAE) Belgrade and Academy of Economic Studies, in which are published original scientific papers, review articles, pre-announcements, book reviews, short communications and research reports. Review articles and book reviews are accepted after a previous consultation/invitation from either a journal Editor, or the book review Editor, in accordance with the journal submission criteria.

The journal ECONOMICS OF AGRICULTURE accepts only manuscripts submitted electronically on English language, as e-mail attachment to the following e-mail address: epoljoprivrede@gmail.com

The articles have to be submitted in duplicate, providing one copy without information about author(s), in order not to violate double-blind review process. In the second copy of the article must be specified all information about author(s) necessary for further correspondence.

Submission of articles to the ECONOMICS OF AGRICULTURE implies that their content (research carried on) has not been published previously in English, or in any other language. Also, submitted papers should not be under consideration for publication elsewhere, and their publication has to be approved by all authors with signed declaration. Publisher reserves right to verify originality of submitted article, by its checking with specialized plagiarism detection software.

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Key words (bold): **6 pt** below the Summary, size **11**, **bold,** *Italic*. Specify maximally 5 key words.

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Literature must be at the end of article (for authors from Serbia before summary in Serbian), in alphabetical order, according to the author's surname.

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a) Journals and other periodical publications

Author, A., Author, B. and Author, C. (2012). *Title of article*. Title of the journal, Publisher, *Volume* (number), pages, location.

b) Books, brochures, chapters of a book

Author, A., Author, B. and Author C. (2012). *Title of book* (edition number - ISBN). Editor, location.

c) Reports from scientific meetings

Author, A., Author, B. and Author C. (2012). *Title of report*. Title of publication from the meeting on which the report was announced, time and location of the meeting, Editor, number of pages.

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