ЕКОНОМИКА
ПОЉОПРИВРЕДЕ
ECONOMICS OF
AGRICULTURE

62.

Београд, април-јун 2015. године
Belgrade, April-June, 2015

INTERNATIONAL EDITORIAL REVIEW BOARD

Prof. Darina Zaimova, Ph.D., Trakia University, Stara Zagora, Bulgaria,

Prof. Matteo Vittuari, Ph.D., Faculty of Agriculture, Bologna, Italy,

Prof. Zoran Grgić, Ph.D., Faculty of Agriculture, Zagreb, Croatia,

Vesna Miličić, Ph.D., University of Ljubljana, Biotechnical Faculty, Ljubljana, Slovenia,

Alexandr Trukhachev, Ph.D., Stavropol State Agrarian University, Russian Federation,

Prof. Dimitre Nikolov, Ph.D., Institute of Agricultural Economics, Sofia, Bulgaria,

Prof. Christina Yancheva, Ph.D., Agricultural University, Plovdiv, Bulgaria,

Dario Šimičević, Ph.D., College of Tourism, Belgrade, Serbia,

Prof. Vladislav Zekić, Ph.D., Facultu of Agriculture, Novi Sad, Serbia,

Aleksandar Rodić, Ph.D., Institute Mihailo Pupin, Belgrade, Serbia,

Prof. Sanjin Ivanović, Ph.D., Facultu of Agriculture, Belgrade, Serbia,

Prof. Milan Počuča, Ph.D., Business Academy, Faculty of Law, Novi Sad, Serbia.

CONTENT

THE INFLUENCES OF THE CULTURAL MODELS ON AGRICULTURAL PRODUCTION STRUCTURES IN ROMANIA AND SOME EU-28 COUNTRIES - A PERSPECTIVE[1]

Andrei Jean Vasile[2], Dusmanescu Dorel[3], Mieila Mihai[4]

Summary

The evolution of the Common Agricultural Policy and the changing of its paradigm was a subject of extensive consideration in the literature, but never the implications of specific cultural aspects on agricultural performance and production structures were ever taken into consideration.

The main aim of the paper is the analysis of the some aspects regarding the influences of the cultural models on agricultural production structures in Romania and some EU-28 countries, form a larger perspective, starting with the CAP transformations over the time and the European agricultural model, analysing the role of the multifunctional agriculture in shaping the holding's structure and performances, and in the last it is considered the role of agriculture and rural communities in promoting renewable including bio-fuels.

Key words: *production structures, cultural model, PAC, multifunctional agriculture, diversification.*

JEL: *Q56, P48, Z1*

---

2   Andrei Jean Vasile, Ph.D., Assistant professor, Petroleum-Gas University of Ploiesti, Faculty of Economic Sciences, B-dul Bucuresti no. 39, 100680, Ploiesti, Prahova, Romania, Phone: +40 721 146 587, E-mail: ajvasile@upg-ploiesti.ro

3   Dusmanescu Dorel, Ph.D., Associate Professor, Petroleum-Gas University of Ploiesti, Faculty of Economic Sciences, B-dul Bucuresti no. 39, 100680, Ploiesti, Prahova, Romania, Phone: +40740237254, E-mail: zlin50@yahoo.com

4   Mieila Mihai, Associate Professor, Valahia University of Targoviste, Faculty of Economic Sciences, Str. Lt. Stancu Ion, no. 35, 130105, Targoviste, Romania, Phone: +40 726 822 882, E-mail: m_mieila@yahoo.com

Introduction

Agriculture represents a sector that has ample reverberations and significations at the EU-28 level, and, through the medium of the numerous evolutions and transformations that it suffered (Antonio, Alberto, 2007; Ioan et al., 2012; Jean, Mircea, 2012; Filon, 2013), it managed to transcend above the classic role that it used to have- the assurance of alimentary security and support for the rural communities, thus becoming a harmonization reference of the usually divergent interests that the member states have. It integrates the national agriculture politics at the highest level. From this perspective, The Common Agricultural Policy can at the moment be appreciated as a sounding board of the evolution of the European Union during its entire existence, reflecting the ample reforms that it suffered in its process of development. It may represent the most visible result of the harmonization process of the interests of the 28 states that now compose UE.

In a reflexive study (Overmars et al., 2013), analyses the impacts of policy measures adopted through the Common Agricultural Policy (CAP) on the farm production, income and prices, and on farmland biodiversity, using a model direct connected to paradigm changes of the European agricultural model of production.

The CAP evolution and the frequent reforms it suffered made this current policy to be radically different from the ones that dates back to the 1950's, the beginning of the 90's or after the reform from year 2007. The newly built paradigm deepens even more the action range, thus having a refined addressability to the rural communities and space, beyond what classic agriculture means. CAP became an active policy, which has to evaluate its instruments and means of action in order to evaluate the ample transformation processes of the rural space, where agriculture continues to hold a preponderant role.

CAP imprints the European agriculture sector a multifunctional dimension, both from the agro-alimentary production perspective- which turned EU-28 into one of the greatest agriculture producers in the world, as an effect of promoting the measures of direct productions- but especially thought the determining role it plays at the level of the European rural communities, ensuring a great deal of services, from jobs for the rural population, to the protection of the community cultural dimensions- the crafting and the local traditions, of the rural communities cohesion and of the environmental protection.

As Viaggi and associates observed (Viaggi et al., 2013), CAP is one of the most important factors in promoting progress at the level of the rural communities, and of the European agriculture in general. Thereby CAP constitute a defining element in ensuring the well-being of the rural communities in the context of globalization and market integration, as its own very existence ensures a stability factor for the cohesion of the European rural space. The CAP influences on local communities are multiple and resonate equally with their local cultural dimension. The adaptation of the rural communities at the CAP exigencies and the new European agricultural paradigm are closely connected to the compatibility level between the local, rural specific, and the exigencies that are imposed by the sectorial competitiveness.

Recent researches made by El Benni et al. (2012) in Switzerland or by Mishra et al. (2009) for the USA highlighted the fact that some of the financial measures that CAP adopted can have dubitative or even toxic effects without an anterior pertinent analysis, if we take into account the reduction of the total budget that CAP had, and the continuation of the sustenance of the direct payments that will continue to deepen inequity of the income that European farmers have.

By decoupling, in 2003, most of the direct payments that were accomplished through the medium of the unique payment schema (SPU) for some of the important sectors such as arable crops, beef and mutton production, or in the dairy products sector, or with the reforms that took place in 2006 in the sugar industry, which continued in 2007 with ample reformative measures in the fruits and vegetables sector and in the viticulture sector, a new CAP paradigm has appeared, which orientated from the classic approach of direct support of the production through the medium of the subventions and of the production shares and, obviously, to a new approach of Pylon II, the one of rural development.

Thereby, CAP, through the medium of the component that concerns the rural development, contributes to the improvement of the living conditions in the rural communities, supporting the creation of new jobs in the rural environment through the medium of its multifunctional character, protecting both the environment and the rural landscapes, which are affected by the intensive agriculture. Also, by eliminating the direct help for the production, the European agriculture stimulated the development of its multifunctional character, approaching the problematic of the rural communities, through the medium of active support, eliminating the surplus of production and the supporting prices, considerably transforming the practices of sectorial financing, which determined an improvement of the market balance and the reduction of the budgetary costs concerning the intervention stocks.

Out of these considerations, CAP, but especially the component that concerns the politics of rural development must follow the improvement of the sectorial competitiveness and of the innovation at the level of the rural communities, through the medium of mobilization of the specific non-agricultural components. Integrating the non-agricultural component and its acceptance as a factor which raises the valorization of the rural potential, imprints the rural communities a translation movement from the classic model of the rural development, in which agriculture has the predominant role, to the multifunctional agriculture model, in which the practices and the local traditions, the culture and the environment become production factors, generating additional value.

Methodology and data sources

Analysing the influences of the cultural models on agricultural production structures in Romania and some EU-28 countries implies a broader approach form the perspective of new CAP paradigm and the changes of the European agricultural model during the years. From this perspective, the article is centered on three main axes:

- the transformation of the European agricultural model under the CAP reforms and

the new European agricultural approach;
- the new CAP paradigm and its influence on agricultural production structures;
- multifunctional agriculture and the rural activity diversifying.

In substantiating these perspectives, it was used a wide range of statistic databases, starting with the Farm Accountancy Data Network (FADN-RICA) database and the Eurostat statistic database (Eurostat, 2015), and not in the last the information available on DG.Agriculture and Rural Development website (DG Agri, 2014; DG Agri, 2015).

The European agricultural model and the Common Agricultural Policy tendency

CAP is founded and equally reflects the features and the principles of the European agricultural model, which targets the achievement of alimentary sovereignty and of the durability of the agricultural production in the European space, starting from the real necessities, both of the consumers and especially of the agricultural producers, which have to be harmonized. From this point of view, according to (European Economic and Social Committee, 2013/NAT/449), the main objectives which CAP must promote and achieve in the common space, are mainly centered on:

– achieving the safety and alimentary security by achieving an agricultural production that is quantitively and qualitatively adequate;
– supporting the production and the marketing of the local products that are specific in the rural zones, and promoting them as interesting vectors for the rural communities, especially of those that have a touristic potential;
– participating at the stabilization of the markets, by limiting the price fluctuations on the agricultural products;
– supporting the incomes that the European agricultures have, usually inferior to those of the employees from the other economic sectors;
– prioritizing the doable utilization of the natural resources, of the biodiversity, along with the preservation of the natural habitats, by highlighting the greening measures of CAP;
– supporting- from Europe 2020 Strategy's perspective - the development and the innovation (smart grow), the development of new renewable energies (durable grow) and the consolidation of the potential of creating new jobs in rural zones (inclusion-favourable grow), by respecting the practices in creating new jobs, contracts and European and extra-community agricultural seasonal workforce. (European Economic and Social Committee, 2013/NAT/449).

Understanding CAP's operating mechanism thus depends on understanding the characteristics of the European agricultural model, which has in foreground performance and high competitiveness of the agricultural sector, founded on an agriculture that has a high level of technical endowment and usage of the intensive production, which is based on promoting large and very large farms. Reorienting to promoting and capitalizing the rural as a determining factor in the promotion of the new European agricultural paradigm imposes a

rethink of CAP's implementing instruments. Thereby, according to a CES opinion (2011), it is appreciated that „the integration of CAP among the other community politics (enterprises and associations, actions of protecting the climate, harmonized inter-sectorial politics, occupying the workforce, energy and natural resources, environment, politics concerning the protection of consumers, development regions and local development, science and technology) (European Economic and Social Committee, 2011/NAT/481)

Agriculture, through the medium of its ample significance it has to the local communities, represents a dominant factor in modeling the rural space, often being the only way to achieve the incomes for a large part of the rural population. Agriculture also contributes to the realization of extensive offers of primary public goods, which represent preconditions for the activities that take place in the rural environment, by the superior capitalization of the available natural resources, of the local cultural potential, of the agro-tourism, of the touristic landscapes along with the possibility of producing renewable.

The extensive reforms that marked the European agricultural sector transformed CAP in a genuine instrument for modeling the rural communities. Rural communities accepted CAP, as it usually was the only source in financially sustaining many rural families, as agriculture had to become multifunctional

Referring to the CAP effects on the occupation in the rural environment (Petrick, Zier, 2012) claim that generating new jobs under the effects of the CAP capitalization is possible only if subsidies of capital are allocated, and in order to create additional workplaces for short-terms, subventions of about 50,000 EUR are needed every year.

On the other hand, analysing the distribution effect that the instruments of agricultural policy has on the income of the farms in Italy (Severini, Tantari, 2015), we came to the conclusion that the direct payments to CAP and changing the paradigm by reallocating resources from Pylon I b y the rural development component will achieve a more equitable distribution of the farmers' income.

As (Kvakkestad et al., 2015) analysed the attitude of the Norwegian farmers on the agriculture and the necessity of financial support of this sector, through the medium of the CAP instruments, it highlights the special importance given to the multifunctional agriculture and of its effects on the rural communities. According to this study, only a small part of the farmers find producing crop landscapes profitable, rather than other public and private goods that is specific to this sector, for which financial support exists.

As it is established in one of the (European Parliament's Resolutions from the 8th July, 2010), „the agro-ecological indicators are highlighting more and more a special potential of the agriculture in the effort of reducing the effects of the climate changes, of the direct reduction of the net greenhouse gases, and in the production of renewable energy, because, if they are practiced in a sustainable way, the agricultural activities are essential for the conservation of the biodiversity, as combating the soil erosion is, at the same time, a determining factor in the reduction of the climate changes, and promoting the multifunctional dimension of the rural space" (European Parliament, 2010).

One of the imperative challenges at which the European agricultural model must respond and adapt to, are, as found in (Finland`s EU Presidency, 2006), mainly centered on:

- – the active management of the financial impact of the agricultural sector on the community budget from the perspective of the direct capitalization measurements;
- – CAP's paradigm change, from directly supporting the agricultural production and of the farmers to financing the greening and agro-environment measurements;
- – the adaptation of the agricultural sector to the environmental changes, by promoting bio-energy production, ecological agriculture and the new ecological technologies of production, which have a much lower impact on the environment;
- – the evolution of agro alimentary prices in context of market instability and volatility;
- – the liberalization of the international agricultural market and the reduction of internal production shares;
- – the challenges that concern anew extension of UE-28 with countries whose alimentary models are having a reduced grade of convergence compared to the European model (Turkey), (Finland`s EU Presidency, 2006).

The evolution of CAP is mostly the result of the beliefs according to which the agriculture, beyond its classical aspect of delivering food and raw materials for the downstream sectors, must achieve a superior valorization of the rural space potential, in the context of diversifying the functionalities of the rural communities.

From this perspective, there appears the problem of CAP's complexity in the perspective of the diversification of the rural activities, of the impact of the European agricultural model on the modeling of the rural economy and its valorization through the perspective of a better capitalization of the potential, along with the evolution of agricultural production structures, in the context of significantly reducing the direct support of the production, and of the modernization of the rural communities under the impact of the global cultural transformations.

At the level of UE-28, the rural communities are significantly transforming under the effects of the PAC reforms, and the rural space becomes multifunctional, sometimes having urban aspects, and agricultural activities stop having the determining role at this level, as accent is put on capitalizing the complementary dimensions.

In order to highlight CAP's influences on the European rural communities, in this research it is taken into consideration the analysis of the evolution of certain significant indicators, which equally reflects both the agricultural level of competitiveness and the multidimensional sectorial influences. In order to understand the impact that agriculture has on the European economy in its ensemble, an important aspect is represented by the agricultural evolution expressed in real terms, in some counties UE-28, 2005-2013. Factor income in real terms represents one of the most representative analyse indicators in the agricultural sector, offering information about the viability of the sector itself, representing an element in founding the agricultural sectorial policies.

Graph 1. Agricultural factor income in real terms (2005-2013)
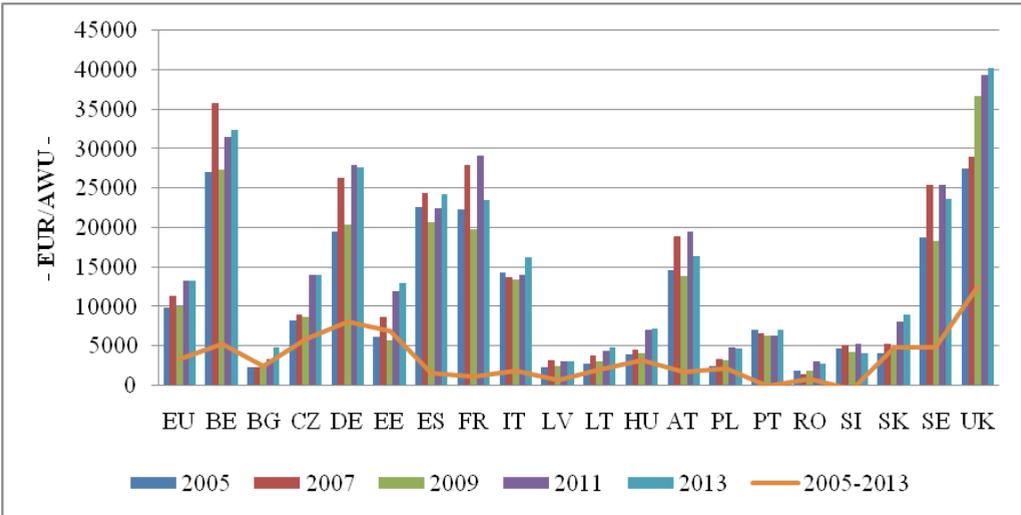
Source: author's based on (DG Agri, 2014; DG Agri, 2015).

By analysing the data from graph 1, the evolution of agricultural factor income in real terms, achieved for year 2005, expresses a significant growth for the analysed period of time, at the level of EU-28, from 115.5% in year 2007 to 134.5% in year 2013. This evolution is registered for most of the member countries. Thus, for group of countries which have influences of social economic model, evolution of agricultural factor income in real terms is more accentuated than in case of the Anglo-Saxon model. In Romania's case, agricultural factor income in real terms increases from 76.8 % in year 2005 to 135% in year 2007.

According to a European Commission DG-Agriculture and rural development evaluation, "compared to a five year average of the period 2008-2012, the EU-27 agricultural income per annual working unit in real terms would be 17.5% higher in 2022 compared to the base period", (DG.Agriculture and rural development, 2015).

The evolution of the agricultural factor income can also be expressed through the Labour force input prism, which, during the same period of time, it registered a significant reduction tendency in the case of most of the analysed countries. The labor force input diminution expresses both the tendency that the agricultural sector to diminish its unique role of employer or preponderant employer in the agricultural zones, in favor of the multifunctional activities. In order to motivate this situation, in graphic 2, the evolution of labour force input is represented in the case of certain countries EU-28, during 2005-2013.

Graph 2. Evolution of labor force input in some EU-29 countries (2005-2013)

As it can be referred from graph 2, during 2005-2007, the labour force input share in some EU-28 countries has significantly reduced. As if in 2005, the labour force inputs in Romania's case, had a share of 20.28% in UE-27 total, eight years later, it was diminished by 4.41%, reaching a level of 15.87% in 2013. In exchange, in the cases of the economies that had traditions from the common space, this indicator has registered slight growths. If, in Germany's case, in year 2005 it had 4.55%, in year 2013 it grew with 0.52%, reaching 5.07%; in France's case, from 7.09% in year 2003, to 7.92%in 2013, or Poland's from 17.09% in 2003 to 19.65% in year 2013. The workforce continues to represent, in agriculture's case, one of the determining factors in capitalizing the potential, despite promoting technologies, of the diversification of the activities and of the multi-functionality of the sectors. Using labour force input in promoting a sectorial extensive growth in the case of the European economies that have tradition, the process of adjustment of the usage of the workforce is opposing in the countries that are recently included in the common space, such as Romania or Bulgaria's cases.

CAP influences in the agricultural production structures

The agricultural production structures are the ones to best feel the CAP effects and adapt to its exigencies. The way they capitalize the instruments that are promoted by CAP, can represent a trait of the influences that have a cultural and adaptation nature to the specific of the local cultural model, by modeling those elements that can be acquired and supported with minimum resistance to change. Agricultural practices are often, if not always, the expression of an agricultural tradition that is created at the level of each geographic space or local community. Given these conditions, the agricultural production structures manage to integrate the traits of the national cultural model, as they themselves are the result of the rural specific influences. From this point of view, the analyse of the evolution of certain indicators of economic efficiency, such as the rapport Total output /Total input, Farm Net Value Added,

Farm Net Value Added/AWU, Farm Net Income/FWU can express a part of the cultural specific model. Thus, in table 1, it is represented the evolution of these indicators, that were previously mentioned, in some UE-28 countries and Romania, for a period of time during 2008-2012, using the FADN-RICA statistics.

Table 1. The evolution of some representative indicators in analysing the farm performance, in some Eu-28 countries (2008-2012)

Country	Year	Farms represented	Total output / Total input (%)	Gross Farm Income (EUR)	Farm Net Value Added (EUR)	Farm Net Income (EUR)	Farm Net Value Added / AWU (EUR)	Farm Net Income / FWU (EUR)
Bulgaria	2012	115,640	1.05	23,502	18,969	8,669	7691.95	3650.33
	2008	146,770	1.1	11,824	9,994	5,189	3965.93	2460.77
Germany	2012	192,450	1.06	121,912	91,540	47,984	41232.39	33067.55
	2008	201,680	0.98	88,217	63,100	27,271	29251.47	19642.62
France	2012	304,190	1.09	108,434	77,253	47,403	38041.34	33115.55
	2008	303,340	1.03	89,297	61,433	34,676	30964.73	23966.13
Hungary	2012	105,320	1.07	37,427	31,419	18,817	19889.24	21586.51
	2008	94,240	1.03	38,640	30,517	16,444	16017.9	12423.4
Italy	2012	80,4670	1.46	35,721	28,653	22,469	22698.85	23435
	2008	818,740	1.54	34,701	27,555	21,695	21064.66	21736.99
Poland	2012	728,160	1.21	17,028	12,736	10,681	7375.49	6710.55
	2008	735,110	1.13	15,173	10,530	8,197	5897.85	5344.72
Romania	2012	1,042,390	1.47	8,329	7,084	5,853	5433.27	4090.05
	2008	1,289,250	1.35	6,181	5,171	4,077	3011.29	2307.05
Sweden	2012	27,890	0.9	80,741	53,537	16,492	37205.63	14710.56
	2008	29,850	0.95	68,818	51,979	26,163	35832.93	22501.9
United Kingdom	2012	92,180	1.03	120,359	87,960	51,632	39419.71	39470.17
	2008	96,740	1.02	97,088	74,800	45,090	36456.72	35505.89

Source: author's based on (FADN-RICA, 2015)

From table 1, it can be easily observed that in year 2002, in the case of indicators like Total output/Total input, most of the analysed countries register above par values, as the greatest value is for Romania (1.47), followed by Italy(1.46), Poland (1.21) and France (1.09). Concerning the efficiency level that is expressed by the other two relations, Farm Net Value Added /AWU and Farm Net Income/FWU, the situation is unfavorable for Romania, confirming the low efficiency of the national agricultural sector, compared to the efficiency of other countries with European tradition.

As it has been highlighted in other previous studies (Ene, Matei, 2012; Andrei et al., 2014; Andrei, Ungureanu, 2014; Adrian, 2015; Tătaru, Nedelcu, 2015; Ciutacu et al., 2015), the agriculture production structures have a determined role in capitalizing the national agricultural potential, from the agriculture exploitations dimension point of view, the level of endowment with technique and technology, of the mobilized workforce, along with the financial support they benefit. Thus, in graph 2, there are represented, at the level of year 2012, the last year

for which there exists available data in the FADN-RICA database, the dimension of relevant indicators from the perspective of which the performances of the agricultural farms can be explained, in the case of the countries that were taken into consideration in this analyses.

Graph 3. Dimension of some relevant indicators in understanding agricultural farms performances
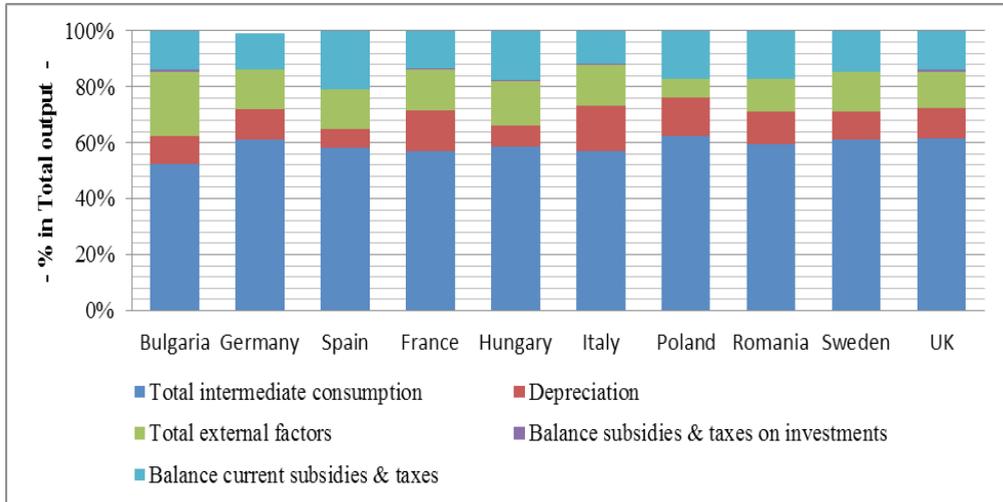
Source: author's based on (FADN-RICA, 2015).

Thereby, even though Romania, along Italy, recorded, in year 2012, in the case Total intermediate consumption, a value that was low compared to the total output, and the lack of vision concerning the replacement of the used capital, highlighted by the relatively low value of depreciation, only in the case of European economies with tradition in CAP, makes that the level of endowment with capital of Romanian agriculture is low (Graph 3).

Another factor that influences the agricultural production structures is connected to the Romanian cultural model, especially to the economical culture of the population. Unfortunately, during the communist regime, the economical culture was negatively influenced. This influence was strongly felt in the Romanian agriculture due to the fact that in that domain of activity, entrepreneurship, under the form of the agricultural exploitation(farms), represent an important factor for the development of the rural spaces, and of the living conditions of the population in the rural environment. The breaking of the great national agricultural properties in a lot of small parcels led to the impossibility to apply modern technology for production, and led to correspondent decreases of the productivity. Only after the adherence to UE in year 2007, a coagulation of the agricultural surfaces that began to be bought or worked by firms which had the ability to ensure a modern exploitation, which had technologies that ensured a productivity that was at least good

If we analyse the agricultural production structures, another factor that we should take into consideration is another aspect of the economical culture of the Romanian society from the past years, which is the orientation to energetic crops. The need of energy of the modern society is growing while the production of fossil fuels is inevitably decreasing. Given these

conditions, starting to use renewable sources of energy becomes a necessity, along with the need to reduce the volume of gasses that have the greenhouse effect (carbon dioxide, water steam, nitrogenate oxides'). One renewable source of energy is represented by bio-fuels (biodiesel, bio-ethanol) which can be obtained from colza and sunflower oil (biodiesel), and cereal, potatoes and sugar beets (bio-ethanol).

Graph 4. Share of energy from renewable sources for Romania (2004-2013)
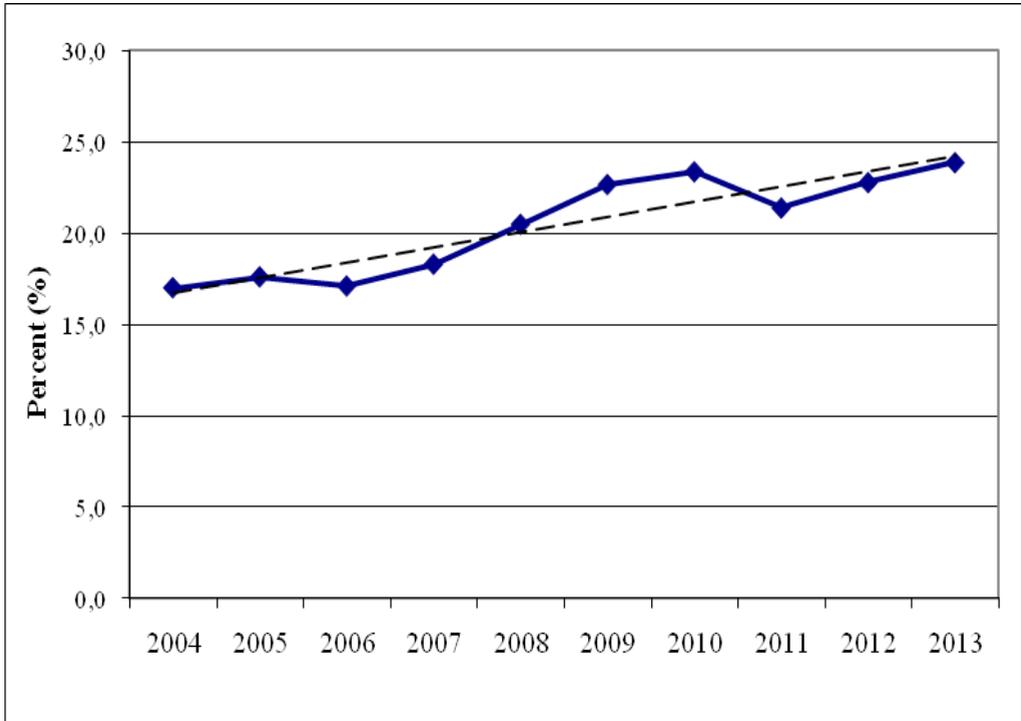
Source: author's based on (Eurostat, 2015).

As you can observe in graph 4, the percentage of energy from renewable sources out of a total of consumed energy has constantly grown since 2004 until now. This correlates to the colza production, which substantially grew due to the alignment to the EU requests concerning the usage of a percentage of at least 5% biodiesel out of the entire quantity of diesel fuel that has been sold in EU, so in Romania too.

Graph 5. Production evolutions` of two major renewable raw materials – Rape and Sunflower in Romania (2004-2013)
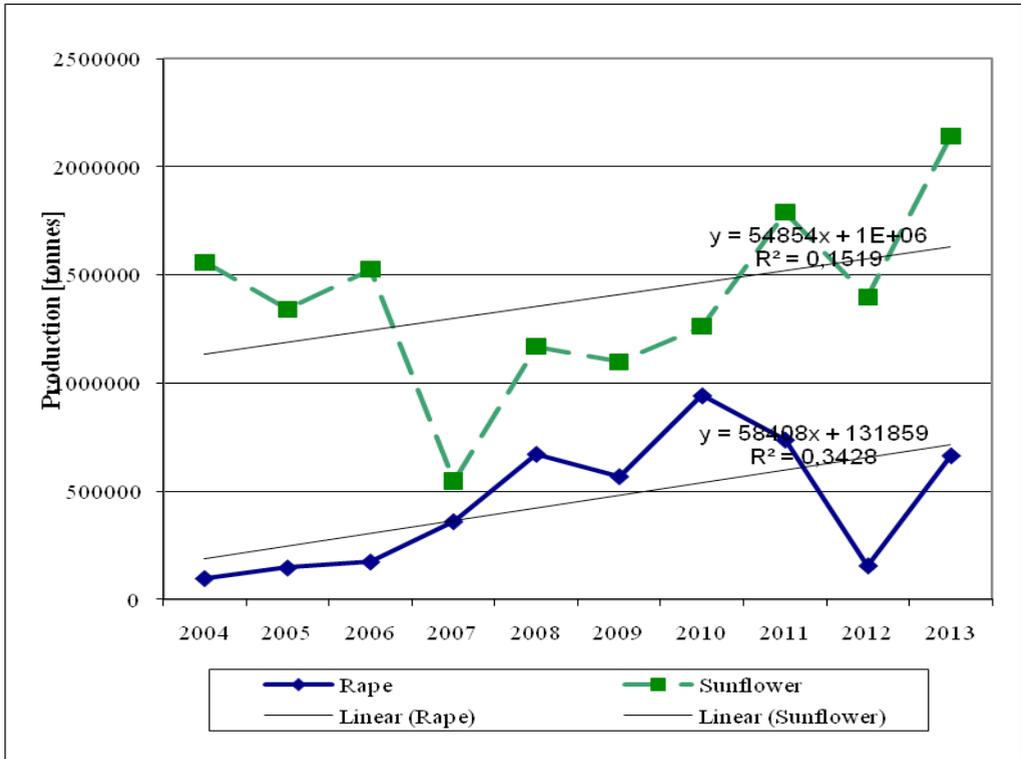
Source: author's based on (INS, 2015).

It can conveniently notice (Graph 5) an important variation of the sunflower production due to the fact that the sunflower oil is seen as an alimentary factor rather than as a diesel fuel resource, so that the percentage of it in the agricultural production structures is influenced by other factors than in the case of colza.

The growth of the biodiesel percentage that will have to be found in the quantity that will be sold in future will lead to a growth in the quantity of colza that is needed, quantity which will lead to a growth in the surfaces where colza is planted. In this case, a balance should be found between the existent agricultural surface and the surface that will be cultivated with energetic crops, but effort will have to be made in order to convince farmers of the necessity of these energetic crops, in a way that would not endanger the alimentary production that the population needs.

Conclusions

The evolution of the Common Agricultural Policy, but especially the paradigm shift from providing direct financial assistance and support for agricultural production to rural communities and environment protection through the greening measures, has imposed dramatically changes in considering the role of agricultural on rurality. During the last two

decades the European agricultural model represents the leading instrument in valuing the EU-28 agricultural potential, both by promoting public goods as the main frame of the historical experience and as a production model for the rural communities, where agriculture remains, after numerous reforms, one of the most important economic activities for rural households.

The main argue of CAP consists in valuing the rural communities' potential by diversifying the activities, where agriculture despite its determinant role is completed by complementary activities as rural tourism, handicraft, renewable production and preserving rural traditions and specific. Greening the CAP is a basically step in promoting and accentuating the multi-functionality role of the rural communities in the EU-28 economy. The influence of cultural model among the rural communities has imposed a specific way of valuing inland agricultural potential and rural community's traditions. We are witnessing a return to the rural traditions and specific, as a component in a higher access of the financial support allocated by Pillar II of the CAP.

During the analysis it was reviled, also that the CAP evolution could be considered as an implicit result of the cultural models influence on production structures including the actual status of the European agricultural model paradigm. The values of some representative indicators in analysing the farm performance, for some of the EU-28 countries took into consideration, during 2008-2012, highlights the discrepancies dispersion in accordance to the cultural models patterns developed during the years by each member state.

As per general, the influences of the cultural models on agricultural production structures in Romania and some EU-28 countries are quite visible and continue to shape both the CAP evolution and the European agricultural model paradigm. In this context, it is important to rethink, both the agricultural production system and the rural paradigm in a larger context of greening the CAP and promoting multi-functionality.

Literature

1. Adrian, S. (2015): *An Analysis of the Relation Between Wine Consumption and Cultural Models*, Economics of Agriculture, vol. 62, pp. 207-227.

2. Andrei, J. V., Ungureanu, A. (2014): *The importance of economic structure evolution in achieving performance - from agrarian economy to competitiveness in Romanian economy*, Economics of Agriculture, vol. 61, no. 4, pp. 945-957.

3. Andrei, J., Eftimie, M., Matei, M. (2014): *The role of Romanian farms in valuing the inland agricultural potential*, Journal of Food, Agriculture & Environment, vol. 12, no. 1, pp. 1532-1535.

4. Antonio, G. S., Alberto, G. G. (2007): *A comprehensive assessment of multifunctional agricultural land-use systems in Spain using a multi-dimensional evaluative model*, Agriculture, Ecosystems and Environment, vol. 120, pp. 82–91.

5. Ciutacu, C., Chivu, L., Andrei, J. V. (2015): *Similarities and dissimilarities between the EU agricultural and rural development model and Romanian agriculture - Challenges and perspectives*, Land Use Policy, vol. 46, pp. 258–266.

6. DG.Agriculture and Rural Development (2014): *Economics of rural areas. Agricultural income*, available at: http://ec.europa.eu/agriculture/rural-area-economics/income/index_en.htm,

7. DG.Agriculture and Rural Development (2015): *CAP monitoring and evaluation indicators - CAP CONTEXT INDICATORS – 2014 update*, available at: http://ec.europa.eu/agriculture/cap-indicators/context/index_en.htm

8. El Benni, N., Finger, R., Mann, S., Lehmann, B. (2012): *The distributional effects of agricultural policy reforms in Switzerland*, Agricultural Economics - Czech, vol. 58, no. 11, pp. 497–509.

9. Ene, C., Matei, M. (2012): *New dimensions of food security in Romania from the European perspective*. The 3rd International Symposium "Agrarian Economy and Rural Development - realities and perspectives for Romania", Bucharest, Romania, October 11-13, 2012, pp.135-140.

10. European Economic and Social Committee (2011): *Opinion of the European Economic and Social Committee on the Communication from the Commission to the Council*, the European Parliament, the European Economic and Social Committee and the Committee of the Regions – The CAP towards 2020: Meeting the food, natural resources and territorial challenges of the future, NAT/481 The future of the CAP, Brussels, 16th March 2011, Reporter: Franco Chiriaco, available at: http://www.eesc.europa.eu/?i=portal.en.nat-opinions.15467

11. European Economic and Social Committee (2013): *Opinion of the European Economic and Social Committee on the Reform of the common agricultural policy in 2013 (own-initiative opinion)*, NAT/449, Brussels, 18th March 2010, available at: www.eesc.europa.eu/.../ces452-2010_ac_en.doc

12. European Parliament (2010): *European Parliament resolution of 8 July 2010 on the future of the Common Agricultural Policy after 2013*, (2009/2236(INI)), available at: www.europarl.europa.eu/sides/getDoc.do?type=TA&reference=P7-TA-2010-0286&language=EN

13. Eurostat (2015): *Environment and Energy Section*, database of EUROSTAT, available: http://ec.europa.eu/eurostat/web/energy/statistics-illustrated

14. Filon, T. (2013): *Aggregate efficiency of resource utilization in the Romanian agri-food sector – macroeconomic evolutions*, Agricultural Economics and Rural Development, vol. 10, no. 2, pp. 155-176.

15. Finland`s EU Presidency (2006): *The European Model of Agriculture - Challenges Ahead,* A Background Paper for the Meeting of Ministers of Agriculture in Oulu 26.9.2006, SN 3098/06, available at: www.euroqualityfiles.net/Documents%20EUAM%20and%20CEECAP/Europe/Future%20policy/oulu_european_model_agriculture_en.pdf

16. INS (2015), National Institute of Statistics, Bucharest, TEMPO online database, available at: http://statistici.insse.ro/shop/

17. Ioan, D., Luminita, C., Jean, A., Mirela, M. (2012): *Using labor force and green investments in valuing the Romanian agriculture potential*, Journal of Food, Agriculture & Environment, vol. 10, no. 3&4, pp. 737– 741.

18. Jean, A., Mircea, U. (2012): *Through Common Agricultural Policy Reforms: A Short Analysis*, International Journal of Sustainable Economies Management, vol. 1, no. 3, pp. 32-40.

19. Kvakkestad, V., Rørstad, P. K, Vatn, A. (2015): *Norwegian farmers perspectives on agriculture and agricultural payments: Between productivism and cultural landscapes*, Land Use Policy, vol. 42, pp. 83-92.

20. Mishra, A., El-Osta, H., Gillespie, J. M. (2009): *Effect on agricultural policy on regional income inequality among farm households*, Journal of Policy Modeling, vol. 31, pp. 325– 340.

21. Overmars, K. P., Helming, J., van Zeijts, H., Jansson, T., Terluin, I. (2013): *A modelling approach for the assessment of the effects of Common Agricultural Policy measures on farmland biodiversity in the EU27*, Journal of Environmental Management, no. 126, pp. 132-141.

22. Petrick, M., Zier, P. (2012): *Common Agricultural Policy effects on dynamic labour use in agriculture*, Food Policy, vol. 37, no. 6, pp. 671-678.

23. Severini, S., Tantari, A. (2015): *The distributional impact of agricultural policy tools on Italian farm household incomes*, Journal of Policy Modeling, vol. 37, no. 1, pp. 124-135.

24. Tataru, A., Nedelcu, A. (2015): *Territorial and Agricultural Resources from the Rural Vrancea Area with Decisive Role in the Development of the Local Economy,* Agricultural Management Strategies in a Changing Economy, p. 161.

25. The Farm Accountancy Data Network (FADN-RICA) database (2015), available at: http://ec.europa.eu/agriculture/ricaprod/database/database_en.cfm

26. Viaggi, D., yPaloma, S. G., Mishra, A., Raggi, M. (2013): *The role of the EU Common Agricultural Policy: Assessing multiple effects in alternative policy scenarios*, Land Use Policy, vol. 31, pp. 99-101.

HOLISTIC MARKETING IN THE FUNCTION OF COMPETITIVENESS OF THE APPLE PRODUCERS IN BOSNIA AND HERZEGOVINA

Dalibor Dončić[1], Nenad Perić[2], Radivoj Prodanović[3]

Abstract

The aim of the work is the analysis of current business situation in which the apple producers in Bosnia and Herzegovina are positioned with development and use of holistic marketing concept as a model for improving the competitiveness of apple producers in Bosnia and Herzegovina. The methodology, which is applied in this work, is a combined qualitative and quantitative research technique. The in-depth interview is used for qualitative research, and for quantitative research the analysis of the import, export, production, trade and the cash flow data, available from statistical agencies, were used. The results showed that the new, developing, apple production strategy is necessary in order to correspond to the business challenges of the 21st century. In the new model of developing, it is suggested that the holistic approach to marketing has the central role. Holistic marketing, with its elements, has a potential to improve competitiveness on the domestic market and to create conditions for stable development of the apple production in Bosnia and Herzegovina.

Key words: *holistic marketing, competitiveness, producers, apple.*

JEL*: Q13, M31*

Introduction

After 1995, there was an increased interest of the producers for apple production, but in the past few years the business results have shown the trends of stagnation in apple production.

The poor business results have caused inability of the apple producers to renew the production cycles with their own finances, and because of the lack of the favorable and low-cost loans, they became indebted and further worsen the problem of solvency. The evident decline in income and revenue and also the income oscillations with constant increase of the costs

---

1   Dalibor Dončić, M.Sc., Ph.D. Student, Syngenta, Vidovdanska Street no. 18, 78400 Gradiška, BiH, Phone: +387 65 814 709, E-mail: dalibor.doncic@syngenta.com

2   Nenad Perić, Ph.D., Associate Professor, Metropolitan University, Tadeuša Košćuška Street no. 63, 11000 Belgrade, Serbia, Phone: +381 11 20 30 885, E-mail: nenad.peric@metropolitan.ac.rs

3   Radivoj Prodavnović, M.A., Faculty of Economics and Engineering Management, University Business Academy, Cvećarska Street no. 2, 21000 Novi Sad, Serbia, Phone: +381 65 89 27 396, E-mail: rprodanovic@fimek.edu.rs

in apple production, from year to year, caused abandonment of production and a constant decline of investments.

The problem of the research shows and defines the subject of the research, which are apple producers, with the economic effects they achieve in the production, the business orientation of the apple producers, as well as the apple market, as it is shown in the first part of the research in order to precisely define the problem. In the second part of the research, the development of the modernized production using holistic marketing as a response and a way for overcoming some existing problems in the production and apple trading are shown.

The purpose and goal of the research are the analysis and the evaluation of the current situation in apple production from the aspect of business concepts. It is believed that the results will provide undeniable arguments for implementing the model of holistic marketing in the apple production and trade.

The research combines different methods and techniques, such as the qualitative method with reference to in-depth interview, as well as the SWOT analysis regarding the quantitative research of the apple production in Bosnia and Herzegovina.

Results of conducted qualitative research technique of in-depth interviews with the apple producers and applied SWOT analysis compared with the quantitative analysis of the areas and production point to one seemingly paradoxical situation. Namely, the statistics show excellent indicators of production area growth, while the situation in the field implies economically difficult situation of all apple producers.

Based on this research, the conclusions were made indicating that the accumulated problems in the apple production and trade require a new model of development of apple production in Bosnia and Herzegovina. The conclusions indicate that a holistic marketing with its elements of internal, integrated, and socially responsible and relationship marketing can provide a good framework and direct the development of apple production towards success.

Literature review

At the beginning of the 21st century, the environment of business entities in the world was changing whit such a rate, intensity and unpredictability that it requires new approaches to business practice. The marketing concept, which had appeared and developed in the 50s of the past century, acted as if it had been looking for some natural upgrading or lifting onto new level of possibilities, as a response to the growing uncertainty in business. That new approach, which exceeds the traditional usage of the marketing concept, is named in a different ways and it is slowly getting attention of the leading professors, as a concept of holistic marketing. The concept of holistic marketing starts with the development, design and implementation of marketing programs, processes and activities, which recognizes the extent and interdependence effects (Kotler, 2006). Practice and science quickly perceived the extent and interdependence of the holistic marketing concept so that it is elaborated by both individual elements, such as the example in the holistic approach to internal marketing (Purcarea, Ratiu, 2011; Munteanu et al., 2014), as well as in the example of a whole theory

about holistic marketing capabilities at company level (Patwardhan, 2014). For this research, the use of the holistic marketing in the education of farmers and small artisans in the large number of European countries is especially interesting. European education and training program organized the educations named „Holistic marketing for women farmers" (Lifelong Learning program, 2008) and „Holistic marketing for micro companies in the trade sector" (Lifelong Learning program, 2012). The new legal framework emphasizes the clear direction of the robust growth and creating business in rural areas. All this was in accordance to Lisbon strategy and for improving sustainability in accordance with sustainable goals from Gothenburg (European Commission, 2005).

Development of business concept in the region is being followed from marketing to holistic marketing and also holistic brand management in various researches (Gligorijević, 2006; Stanković, 2007; Đukić, 2008). The possibilities of applying holistic marketing in a variety of profitable and non-profitable activities, and to applying holistic marketing in production and marketing of organic food and all in terms of sustainable development (Davčik, 2006; Rakić, Rakić, 2007; Panić, 2011; Grgar, Radinović, 2013). Previously, the importance of marketing of agricultural products in the process of developing the national economy and the agricultural sector was well-researched. The importance of marketing of agricultural products is great, thus we have the analysis of marketing in agriculture with special focus on the specifics of agricultural products which dictate special approach to marketing mix instruments (Paraušić et al., 2007; Vlahović, 2011). We especially emphasize the important research on marketing business orientation of the small and medium agro-industrial companies, and also the affirmation of associating and marketing in the function of creating competitiveness in the agrarian sector (Cvijanović, Milenković, 1995; Cvijanović, 2000; Cvijanović, Popović, 2002).

The business activities of the fruit producers in BiH are mostly analyzed from the aspect of quantitative indicator, based on the official statistic data from respected institutions like „Agency for Statistics of BiH" which includes import and export of goods according to customs procedures (Ćejvanović et al., 2014). The agricultural market and the basic conditions have also been under the research, including the structure of the crop production, vegetable production, fruit production and cattle production with the analysis of the market demand for agricultural products (Vukmirović, 2004). The unbalanced supply and demand, and also the variation of the fruit selling price, represents the important research for better understanding business problems of the fruit producers in BiH (Vaško et al., 2010). The literature review reveals the lack of qualitative and quantitative research about possibilities of the marketing usage in fruit production and trade in BiH and all that has been done for better understanding and improving regional competitiveness of the apple producers in BiH.

The research methodology

The research methodology of the business and marketing orientation analysis concerning fruit producers is the combination of qualitative and quantitative research. Qualitative research precedes quantitative research in order to collect enough information about the elements and characteristics of the business and marketing orientation of the fruit producers. Further

verification of this information on a representative sample implies continuing of research with quantitative methods. The structured questionnaire was used as an instrument of the research. In-depth interviews were organized in Lijevče polje and Potkozarje, as the most important regions for fruit production in Bosnia and Herzegovina (Dončić, 2014). Survey using in-depth interviews included a total of ten respondents from the population of agricultural fruit producers. Participants were selected using intentional sampling method. Surveyed farmers were selected based on the size of land area that they cultivated (with 2 ha to 10 ha) as well as medium-scale producers in Bosnia and Herzegovina, which represent the most vital part of agricultural producers.

The secondary source of the information was Agency for Statistics of Bosnia and Herzegovina which provided data with the statistic annuals and Statistical Yearbook and Bulletins. FAO Statistic Data Base and publications were also used as source.

The results and discussion

The crisis in the production and trade of apples is particularly deepen by the general economic situation in the country, reducing foreign investment, high unemployment rate, reduced consumer purchasing power. All the above motivated the initiation of this study as an endeavor to explain the observed negative phenomena and weaknesses of the fruit producers with offering possible solutions in order to eliminate obstacles for further successful development of apple production in Bosnia and Herzegovina.

The apple market in Bosnia and Herzegovina

In the Table 1, following elements of the apple market in Bosnia and Herzegovina were analyzed: the number of trees, the estimated area covered with the apple trees, the area growth through the observed period, the apple production, etc.

Table 1. Number of trees, produced amounts and yields (period 2005-2013)

Year	Number of trees	Estimated number of hectares	Index 2005=100%	Production (t)	Yields per tree (kg)
2005	3,426,944	1,505	100	52,181	15.2
2006	3,711,468	1,630	108	58,109	15.7
2007	3,982,891	1,750	116	60,962	15.3
2008	4,189,878	1,840	122	51,946	12.4
2009	4,610,256	2,025	134	71,507	15.5
2010	4,812,681	2,114	140	71,660	14.9
2011	5,284,959	2,322	154	75,334	14.3
2012	5,610,522	2,465	163	50,023	8.9
2013	6,223,340	2,734	181	85,117	15.7

Source: Authors' calculation according to data from ASBH, 2014.

Areas. In statistics of Bosnia and Herzegovina, the areas covered with the apple trees were not evident from the official statistics because the data were provided by the old methods based on the number of fertile trees. The areas can only be estimated based on the number of trees, which have been planted in recent years, concerning the unit area. Based on in-depth interviews with experts in the field of fruit production it is estimated that in the recent decades the rootstock M106, which is planted at a spacing of 4m x 1.5m, in a row and rootstock M9, planted at a distance of 1 m in a row and 3.5 m between the lines, are equally present. If the average value of the planting density is calculated, the 2,276 trees/ha were planted in average, which makes an estimation of 2,734 ha with fruit trees in 2013. It is immediately noticeable that the trend is opposite comparing to the world trend where the areas under apple orchards are decreasing, while in Bosnia and Herzegovina areas under apple plantations are increasing rapidly, thus the surface area increased by over 80% compared to the reference year of 2005 (Table 1.).

Production. The apple production in Bosnia and Herzegovina follows the growth of the areas. The production increased from 50,000.00 tons in 2005 to 85,000.00 tons in 2013, which represents the significant growth. This trend of significant growth deviated only in 2012 and it was caused by the frost at the time if apple flowering. In the segment of the production growth, the trends in Bosnia and Herzegovina are equal with the world trends, including the growth of the overall production (ASBH, 2014).

Yields. Yields per tree are about 14 kg (ASBH, 2014) and if the estimated numbers of 2,276 trees per hectare are analyzed, the average yield is 34 t/ha, which is a fairly good indicator. However, it also represents the need for improvement, if compared with Austria and Italy, where the average yield exceeds 60 t/ha. Apple fruit production in Bosnia and Herzegovina varies due to the weather conditions and it suggests possible use of modern technology for reducing these oscillations. The average yields achieved in Bosnia and Herzegovina can be considered as satisfying, and the problem is in the structure of classes which is highly unfavorable. Participation of the extra and the first class is minor and it fluctuates significantly, therefore it represents one of the main reasons for the poor profitability for the apple producers in Bosnia and Herzegovina.

Trade. The total apple trade in Bosnia and Herzegovina is around 87,000 tons. Domestic production covers 64,000 tons, the average import of the apple covers 23,000 tons and the export covers about 5,000 tons in the studied period (ASBH, 2014). The distribution chains in Bosnia and Herzegovina are long and between producers and consumers there is a repurchase process in the wholesale and retail. A large number of apple retailers and a small number of customers cause low purchase prices for producers and high selling prices in retail stores. All the difference in the prices is claimed by purchasers and retailers especially supermarkets.

The purchase price of apples during harvest time, when 90% of the producers sell the apple because they do not have the possibility for storage, was 0.40 KM for many years and the price went up to 0.47 KM in 2010. However, in 2011 there was a decrease in price by nearly 20 % comparing to the previous year. In 2012, there was a strong frost at the time

of apple flowering in Potkozarje area, and the fruit producers lost about 90 % of yield, according to the official statistics of the State Commission for Damage Assessment. The fruit producers made no profit from price increase caused by the small supply of domestic apple. Especially worrying were 2013 and 2014 when the purchase prices were 0.35 KM, which is the lowest price in the studied period and 10% lower from the average purchase price in the last decades (Table 2).

The lower prices, with the frost in 2012, make the last three years extremely unfavorable for the apple producers and they were cause for many problems in financing further production (Table 2). These low purchase prices of apples are extremely unfavorable if we compare them with the prices of raw material, which has the permanent and constant growth from minimum 3% per year, as it was established by the analysis and field research.

Table 2. The average purchase apple prices from 2006 to 2014

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014
Price KM	0,41	0,40	0,41	0,45	0,47	0,39	0,57	0,35	0,35

Source: According to Dončić, 2014.

Consumption. The fresh apple consumption per capita in Bosnia and Herzegovina is estimated to 12 kg per year (ASBH, 2014). The apple consumption per capita annually is higher than the average consumption in the world, which is 8.4 kg, but it is behind developed countries of EU, where the consumption of the fresh apple per capita is 50 kg per year (FAO, 2014). The specific problem in Bosnia and Herzegovina regarding the increased apple production is different from the apple production in the world, where the increase of the production was followed by the increase of the apple consumption. The apple consumption in Bosnia and Herzegovina has been stagnating for years, and the increased production and supply in these conditions, as well as the demand, caused price drop which is negatively reflected on the profitability and sustainability of the apple producers in Bosnia and Herzegovina.

Trends. The trends in the production and the offer of the fresh apple demand the constant innovations from the production technology itself. Health, environment protection, high ecological standards of the raw material, reduced usage of agrochemicals and new systems of production, for example integral production, organic production and constant certification are required. These innovations are especially seen in assortment and in the constant improving of colors, appearance and organoleptic characteristics of the apple. There is also a trend of creating club-apple varieties with a lot of limitations in their reproduction. Special innovations are in apple packing, small packages containing 2 to 6 apples of different varieties in one package and the packages are made from ecological material. Labeling and traceability of the product origin back to the orchard in which the apple was produced are also important. The apple producers in Bosnia and Herzegovina rarely make the effort to follow these innovations and the reasons for that are mainly lack of knowledge, fragmentations, financial weakness and the low level of the organization.

SWOT analysis of the apple industry in Bosnia and Herzegovina

In the analysis of the condition of the apple industry in Bosnia and Herzegovina, the central place takes SWOT analysis, made in the cooperation with the experts from the area of apple production. SWOT analysis perceived inner or the internal weaknesses and strength as well as the external or outward threats and opportunities, and all in order to be able to identify main problems and develop models for elimination of restrictions and for opening possibilities for the further successful apple production.

The internal analysis of weaknesses and strength

Table 3. The internal analysis of the weaknesses and strength of the apple producers

Weaknesses	Strengths
Seedlings	
Land preparation	
Assortment	
Mechanization	Climate
Netting	Land
Irrigation	Water
Cooperatives	Fruit growers
Financial strength	Agronomists
Supply of high percentage of II class	Institutions
Purchase of raw material	
Negotiating positions	
Modern warehouses	
Customers	

Source: According to Dončić, 2014.

Weaknesses. **S**eedlings, regardless of the clear legislation on quality norms, are of poor quality. Poor quality of seedlings have been is especially present since 1995, after the war, when the seedling demand increased and the seedling material was imported from the nearby countries, without any control and monitoring. This poor quality is especially reflected in the authenticity of varieties where the real condition deviates from the declared condition, as well as in the regression of the varietal characteristics where the varieties have worsen their typical characteristics such as the color, shape, taste, etc. (Table 3).

The land with its physical, chemical and biological features was not properly considered when it comes to raising apple orchards. In order to have fewer expenses, the growers' neglected problems such as acid land, pseudogley soil, the lack of the organic substances, and so on, which had the catastrophic consequences on numerous orchards and also caused bankruptcy of some fruit growers.

The technology of the apple production with the good selection of adequate rootstock and the production system, often worked by the inertia and new trends in demanding extra and first class apple were not considered. Financial insolvency also caused small percentage of orchards with integrated anti hail screens or irrigation systems.

Cooperative associations practically did not exist and the problem of the fragmentation of parcels is pronounced because most of the small-scale growers had weak negotiation positions with raw material suppliers and also with the consumers of their products, which are in considerably small number and they have strong negotiation positions.

The product quality, caused by many errors, is poor. The main errors, which affect the product quality, are poor seedlings quality, unprofessional soil preparation and low technological level. According to the assessment by the experts, the average quality classes of apples were 50% I class, 25% II class and 25 % III class. To be profitable and self-sustainable, the experts believe that the apple growers should reach the level of 80% I class, 15% II class and 5% III class which is hard to achieve without serious reconstruction and the new model for improving the apple production, according to the research in the field.

Strengths. The climate elements are important for apple production and for the quality of fruits, such as sun light, heat, temperature, water and humidity with precipitations, as well as with the clean rivers, rain, snow, hail, frost and wind which are good for the apple production and high quality of fruits, in the observed area (Table 3).

Soil is reflected through the strength of apple production because it possesses the fertility potential and supplying plant with air, water and mineral substances, but only with appropriate preparation, because of its specificity which must not be neglected during raising plantations.

Human resources are also the strength of apple production because we have young fruit growers who make new plantations and want to stay in the courtsides and work on fruit production. The manpower in regards to EU is much cheaper. Therefore, the apple production should be competitive advantage for the domestic apple producers. Agronomists are also one of the strengths of the apple production. The number and the education of agronomists are the subjects for discussion and debate in the professional community, but they also represent good foundation for further growth. Institutions, such as Agricultural Faculty, Agricultural Institute, Ministry of Agriculture with their experts, also represent strength and a good foundation for forming a strong and precise strategy of progress, as well as its implementation.

External analysis of threats and opportunities

Table 4. External analysis of threats and opportunities for apple producers

Threats	Opportunities
Weather extremes New pests New causal agents Agrochemicals Foreign competition Supermarkets Purchasing power of customers Fruit consumption Processing Loans	Domestic market Foreign markets New fruit species New varieties Indigenous varieties Integrated production Processing Organic production Certification

Source: According to Dončić, 2014.

Treats. The weather extremes, which have specific negative impact and appear very often, are hail, frost, drought and floods. Technologies, for example, anti-hail screens, anti-frost systems, irrigation, canals and drainage were not widely used in the apple production due to expensive implementation (Table 4).

New pests and new causal agents present a complex problem and the cooperation of the various science and professional institutions is needed in order to develop a model for monitoring these natural factors.

The uncontrolled use of agrochemicals, without enough knowledge and awareness about the harmful consequences, is also a major threat to contamination of the product and further deterioration of the image of domestic apple growers. Controlled and proper use of agrochemicals and a good communication with customers is the basis for building trust and gaining competitive advantage in the domestic market.

Competition is present with an average of 23.000 tons and holds 20% to 25% of the domestic market (ASBH, 2014). The main competitors are Macedonia, Poland and others, where Macedonia and Poland compete in the segment of low apple prices. Italy and Austria are competing in the segment of high apple prices, thus the domestic producers are disadvantaged and hardly can secure their market. Free trade agreements, such as CEFTA, further liberalize market he market and complicate the development opportunities in the domestic market. Foreign-owned supermarkets have been a strong competition for local traditional farmers markets are favorable to foreign supplier while putting domestic apple producers in subordinate position.

Purchasing power of consumers in Bosnia and Herzegovina, with the economic crisis, has a significant impact on the apple consumption and it is considered to be on the level of 12 kg per capita, per year with declining trend (ASBH, 2014). Decline in apple demand, together with the growth of production, inevitably leads to prices decline and to the problems of sustainability for fruit growers. Apple consumption, without the stimulation and promotion programs, will certainly continue to decline, and therefore the support is needed for the apple producers and for consumers to raise awareness about the consumption of the apple for health purposes. The apple producers have to rely on the support the government institutions and agencies.

Opportunities. The domestic market represents the greatest opportunity for the apple producers because there is high import percentage and low consumption. These are the two segments which must be seen as a development option, i.e. program to replace import with domestic production and promote small-scale apple consumption per capita, per year. Strengthening position in domestic market should follow systemic approach to foreign markets where the most perspective are considered to be the Russian Federation market and Arabian market (Table 4).

The new fruit species, as well as the new varieties, especially indigenous and original, should be one of the systemic program measures for finding new products in offer differentiation and the attempt of creating the extra value. The apple producers are unable to seek for new fruit

species and varieties themselves, and once again referred to cooperate with both foreign and domestic institutions.

The new systems of the agricultural production, which include organic food, functional food, integrated fruit production and ecological production, can also be the source of the competitive advantage. These productions must be followed by quality certification with standards and also with the communication with consumers.

Processing and new products such as juices, cider, beer, as well as some traditional products such as compotes, sweets, jams, are the possibilities which have not been paid enough intention to, so they remained insufficiently used as a method of creating the new value in the apple and fruit production in general.

The concept of holistic marketing in the apple production

It is assumed in the holistic approach that everything is significant in business and that in practice a comprehensive and integrated cooperation is often required. All economic entities apple producers need a new approach to work and competition with regard to the new marketing environment.

The components of the holistic marketing are (Kotler, 2006):

Ø *Internal marketing* – commitment of everyone in the organization to use the appropriate marketing principles;

Ø *Integrated marketing* – commitment to use multiple instruments of creating, delivery and communication of values and their optimal combination;

Ø *Socially responsible marketing* – understanding the ethical, legal and social influence of the organization, as well as the organizational influence on the environment; and

Ø *Relationship marketing* – creating the exceptional, multilateral relations with customers, suppliers and other partners.

Internal marketing in the apple production. The internal marketing, as a component of the holistic marketing, ensures that everyone in the organization of the fruit growers or apple producers accepts appropriate marketing principles. Accepting marketing principles, using internal marketing, is particularly important for the holders of households at the level of fruit families, but also for the organizers of production, management associations and cooperatives. The internal marketing has a task to train and motivate the apple producers in order to serve to the customers in the best way. Holistic marketing understands that the business activities, inside the production unit, can be equally important as well as the activities which are directed outside these forms of organization. The internal marketing is performed on several levels and several business functions, but the common thing is that marketing functions have to be coordinated towards customer point of view.

The main role of the internal marketing in the holistic approach to marketing in the apple production is in the power of internal marketing to reach out to every manufacturer and to

convince them that they have the influence on the consumer with all their activities, raw material purchase, proper use of agrochemicals and the other important activities. Therefore, if the above mentioned activities are used properly and if the communication with the consumers is well, this all can be a competitive advantage, but also it can be a high risk for the quality placement of fruit if errors are made.

Integrated marketing in the apple production. The task of the integrated marketing is to design the marketing activities and include them into integrated marketing programs in order to create, communicate and deliver the values for consumers above the expected or common. The integrated marketing program consists of a series of decisions related to improvement of business process aspects. The integration of activities and marketing process aims to maximizing their common effects.

In other words, planning and implementation of any marketing activities have are carried out taking into consideration all the other activities. Improvement of business processes cannot be achieved with buying cheaper raw material without its origin, because it is contrary to and in conflict with health safety standards of products. The integrated marketing allows the coordination of the purchase, health product safety standard and communication about these values with customers.

Relationship marketing in the apple production. The main goal of marketing became the development of close, long-term relations with all individuals and organizations that can directly or indirectly influence on the success of the apple producers' marketing activities. Relationship marketing aims to build mutually satisfying relationships for the most important parties. The key parties in the business relations are consumers, buyers, suppliers, distributors and the other partners in marketing, in order to obtain and maintain jobs.

For agricultural producers, including the apple growers, the key parties also include the Ministry of Agriculture, Forestry and Water Management, Agricultural Institutes, Agricultural Faculties, state and republic agencies, all in the position for providing services in agriculture and all the other institutions, which are directly or indirectly involved in issues related to food, agriculture or the environment. The influence of these institutions on the development, and the competitive advantage of fruits and vegetables producers, can be enormous.

The final result of the relationship marketing is building the unique marketing property which is called marketing network. Marketing network, in the case of fruits and vegetables producers, consists of producers and their supporting stakeholders (consumers, customers, suppliers, distributors, retailers, agencies, scientists, professional workers, state institutions, etc.).

The concept of socially responsible marketing in the apple production. Socially responsible marketing is included into the holistic approach to marketing and it involves understanding of the wider interests and ethical contexts, and also the context of the environment, legal and social marketing activity and the program. The main goal of the company and of the individual is a successful business that makes profit. Every business takes place in the

community that has its expectation and rules, and also in a limited environment such as in a market, which is strongly influenced by the community. Taking this into consideration, development of the modern concept of socially responsible marketing is becoming an important factor of competitiveness.

The apple producers represent the part of the agricultural food production that is subjected to many issues today, such as environmental protection, ethical use of new technologies, safety and food safety. These are the reasons why it is socially responsible marketing, for the apple producers, essential in their communication with consumers. Risk management in food production has significantly been developed in the last decades.

Conclusions and recommendations for further research

In the analysis of the apple industry in Bosnia and Herzegovina, besides good statistic indicators that relate to the growth of the areas covered with apple orchards, SWOT analysis has shown many weaknesses and threats that are present in this once highly profitable production of fruits. It has also shown the insufficient use of strengths and opportunities, which in overall indicates the great reduction of the domestic apple producers' competitiveness.

The areas covered with apple in Bosnia and Herzegovina are estimated on more than 2,700 hectares and they have increased by over 80% since 2006. However, the rapid growth of areas and production was accompanied by many system failures that have led to a very difficult financial position of the fruit producers in Bosnia and Herzegovina. The economic crisis and the decline in the apple consumption, with the strong competitors on the domestic market, caused the decline in selling prices and the problem of sustainability of the apple producers.

SWOT analysis revealed many weaknesses of which we particularly point out the poor quality of planting material, unprofessional land preparation, outdated technology, lack of cooperatives, poor quality of final products, fragmented supply of raw material and the low offer. Weather extremes, new pests, disease causal agents, unprofessional use of agrochemicals, a strong presence of foreign competition which holds approximately to 25% of the market in Bosnia and Herzegovina, supermarkets which are taking over the apple trade and for those actions the domestic producers are not ready, are most important threats.

In the future development of the apple industry, a new systematical, organizational and managing model must be developed, in order to minimize and reduce these weaknesses and threats, and to maximize the strengths as climate, lands, people and opportunities, as well as domestic market, new varieties and new systems of production. This new model represents the implementation of holistic marketing which with its elements, internal marketing, integrated marketing, socially responsible marketing and relationship marketing, corresponds to the challenges which are brought to the apple producers in 21st century.

Research results of the apple producers in Bosnia and Herzegovina can be used in a function for strengthening regional competitiveness of the mentioned producers through identifying

the weaknesses and suggesting on activities for overcoming the obstacles. The fruit producers need the assistance from the government institutions to be able to adopt marketing orientation and holistic marketing in order to improve competitiveness.

Literature

1. Agency for Statistics of B&H (ASBH), *Statistical yearbooks for the period 2006 to 2014*, database of ASBH, Sarajevo, available at: http://www.bhas.ba/index.php?option=com_publikacija&view=publikacija_pregled&ids=4&id=14&n=Poljoprivreda, accessed at: February, 2015.

2. Cvijanović D., Milenković, S. (1995): *Marketing poslovna orijentacija agroindustrijskog preduzeća - Institut za kukuruz "Zemun Polje" Beograd,* Zbornik radova, Simpozijum Inovacije u agrobiznis menadžmentu, Aranđelovac, pp. 3-5.

3. Cvijanović, D. (2000): *Uticaj istraživanja marketinga na donošenje odluka i njihova povezanost u poljoprivrednom preduzeću,* Proceedings, Naučni skup sa međunarodnim učešćem, Razvoj sela i agrobiznisa – šta posle sankcija?, jun 2000, Kopaonik, pp. 299-307.

4. Cvijanović, D., Popović, V. (2002): *Marketinška orijentacija preduzeća uslov razvoja malih i srednjih preduzeća u agrobiznisu Srbije,* Ekonomika Poljoprivrede, vol. 49, no. 3-4, pp. 129-135.

5. Ćejvanović, F., Ivanković, M., Lasić, M., Vaško, Ž. (2014): *The Impact of Foreign Trade in Agricultural products of Bosnia and Hercegovina within the Framework of CEFTA 2006,* Economics of Agriculture, vol. 61, no. 4, pp. 975-987.

6. Davčik, N. (2006): *Integralni ili integrisani marketing,* Marketing, vol. 37, no. 3, pp. 133-138.

7. Dončić, D. (2014): *Analiza poslovnog koncepta proizvođača voća*, unpublished internal documentation (in-depth-interviews with selected fruit producers), Lijevče polje and Pokozarje, BiH.

8. Đukić, S. (2008): *Holističko upravljanje markom zasnovano na povjerenju i emocionalnoj privrženosti potrošača, tematski zbornik,* Razvijanje konkurentske prednosti preduzeća u Srbiji u uslovima evropskih integracija, Univerzitet u Nišu, Ekonomski fakultet, pp. 123-134.

9. European Commission (2005): *Putting rural development to work for jobs and growth*, Directorate-General for Agriculture and Rural Development, available at: http://ec.europa.eu/agriculture/publi/newsletter/lisabon/special_en.pdf, accessed at: February, 2015.

10. FAO (2014): *Annual report*, FAO STAT, available at: www. faostat.fao.org, accessed at: February, 2015.

11. Grgar, D., Radinović, B. (2013): *Implementacija koncepta holističkog marketinga kao osnova uspešnosti reformi javnog sektora Republike Srbije,* Poslovna Ekonomija, no. 1, pp. 177-194.

12. Gligorijević, M. (2006): *Od marketinga do holističkog marketinga,* Ekonomske teme, no. 1-2, pp. 233-239.

13. Kotler, Ph. (2006): *Marketing menadžment,* Beograd: Data status.

14. Lifelong Learning program (2008): *Holistic Marketing for Women Farmers,* Project type: Development of Innovation, contact person: Malschinger, A., available at: www.adam-europe.eu/prj/4706/project_4706_en.pdf, accessed at: February, 2015.

15. Lifelong Learning program (2012): *Holistic Marketing for Micro-enterprises in the Handicraft Sector,* Center of the Republic of Slovenia for Mobility and European Educational and Training Programs, Slovenia, Ljubljana, Project no. LLP-LDV-TOI-03/12, available at: http://ec.europa.eu/education/tools/llp_en.htm, accessed at: February, 2015.

16. Panić, S. (2011): *Holistički marketing u funkciji tržišne transformacije preduzeća iz sektora namenske proizvodnje,* Vojno delo, vol. 63, no. 3, pp. 332-341.

17. Patwardhan, M., A. (2014): *A partial theory of holistic firm-level marketing capability: An empirical investigation,* Journal of Management and Marketing Research, vol. 16, pp. 1-46, available at: http://www.aabri.com/manuscripts/141880.pdf

18. Paraušić, V., Cvijanović, D., Subić, J. (2007): *Afirmacija udruživanja i marketinga u funkciji kreiranja konkurentnosti agrarnog sektora Srbije,* Institut za ekonomiku poljoprivrede, Beograd.

19. Purcarea, V., T., Ratiu, P., M. (2011): *How to keep loyal relationships with service customers using holistic marketing,* Holistic Marketing Management, vol. 1, no. 1, pp. 27-32, available at: http://holisticmarketingmanagement.ro/RePEc/hmm/v1i1/1/7.pdf

20. Rakić, B., Rakić, M. (2007): *Holistički marketing organske hrane u funkciji održivog razvoja poljoprivrede,* Zbornik radova, XV Naučno-stručni skup sa međunarodnim učešćem o prirodnim vrednostima i zaštiti životne sredine - EkoIst' 07 – Ekološka Istina, Sokobanja, pp. 218-222.

21. Stanković, Lj. (2007): *Holistička organizacija marketinga,* Ekonomske teme, no. 3, pp. 39-52.

22. Munteanu, C., Pagalea, A., Cristea, A. (2014): *A Holistic approach on internal marketing implementation*, Business Management Dynamics, vol. 3, no. 11, pp. 9-17.

23. Vaško, Ž., Ostojić, A., Drinić, Lj., Figurek, A. (2010): *Utvrđivanje optimalnog momenta prodaje jabuka sa stanovišta uticaja troškova skladištenja,* Agroznanje, vol. 11, no. 3, pp. 157-164.

24. Vlahović, B. (2011): *Tržište i marketing poljoprivredno-prehrambenih proizvoda,* Poljoprivredni fakultet, Novi Sad.

25. Vukmirović, N. (2004): *Agricultural market in Bosnia and Herzegovina,* Project: "Inventory of Post-War Situation of Land Resources in Bosnia and Herzegovina", GCP/BOSNIA AND HERZEGOVINA /002/ITA, available at: www.agrowebcee.net/...ba/.../Agricultural_market_in_Bosnia_and_Herzegovina_1.pdf, accessed at: February, 2015.

HOLISTIČKI MARKETING U FUNKCIJI KONKURENTNOSTI PROIZVOĐAČA JABUKE U BOSNI I HERCEGOVINI

Dalibor Dončić[4], Nenad Perić[5], Radivoj Prodanović[6]

Sažetak

Cilja rada je analiza aktuelneposlovnesituacije u kojem se nalaze proizvođači jabuke u Bosnia and Herzegovina sa razvojem i primjenom koncepta holističkog marketinga kao modela unaprijeđenja konkurentnosti proizvođača jabuka u Bosnia and Herzegovina . Metodologija primjenjena u radu je kombinovana kvalitativna i kvantitativna tehnika istraživanja. Od kvalitativnih istražuivanja koristi se dubinski interviju a od kvantitativnih istraživanja analiza uvoza, izvoza, proizvodnje i prometa iz dostupnih statistačih zavoda . Rezultati ukazuju da je potrebna nova strategija razvoja proizvodnje jabuke u Bosnia and Herzegovina da bi se odgovorilo na izazove koje nameće poslovanje 21. vijeka. U novom modelu razvoja predlaže se da holistički pristup marketingu ima centralnu ulogu. Holistički marketng sa svojim elementima ima potencijal da unaprjedi konkurentnost na domaćem tržištu i da stvori pretpostavke stabilnog razvoja proizvodnje jabuke u Bosnia and Herzegovina.

Ključne riječi: *holistički marketing, konkurentnost, proizvođači, jabuka.*

---

4   Mr Dalibor Dončić, doktorant na Univerzitetu Metropolitan, Syngenta, Vidovdanska 18, 78400 Gradiška, BiH, Telefon: +387 65 814 709, E-mail: dalibor.doncic@syngenta.com

5   Prof. dr Nenad Perić, vanredni profesor, Univerzitet Metropolitan, Tadeuša Košćuška 63, 11000 Beograd, Srbija, Telefon: +381 11 20 30 885, E-mail: nenad.peric@metropolitan.ac.rs

6   Radivoj Prodanović, M.A., Fakultet poslovne ekonomije i inženjerskog menadžmenta, Univerzitet poslovne akademije, Cvećarska 2, 21000 Novi Sad, Srbija, Telefon: +381 65 89 27 396, E-mail: rprodanovic@fimek.edu.rs

POSSIBILITIES OF MIRR METHOD APPLICATION FOR EVALUATION OF INVESTMENTS IN AGRICULTURE: AN EXAMPLE OF PIGS FATTENING[1]

Sanjin Ivanović[2], Lana Nastić[3], Bojana Bekić[4]

Abstract

In the case of some agricultural investments, often net cash flow changes its sign from positive to negative, many times during the project. It causes the problem of internal rate of return calculation, which is an important indicator of economic effectiveness of investments. That is, in such situations, internal rate of return cannot be used. To solve this problem, modified rate of return is applied. This paper aimed to describe this method in detail, and to show its calculation for investments in pigs fattening. By application of modified internal rate of return it is determined that pigs fattening, under assumed conditions, is economically justified. Also, authors calculated the upper limit of discount rate (cost of capital), to which investment in pigs fattening is economically justified. It is concluded that, in the case of specific agricultural investments (such as pigs fattening), the use of traditional internal rate of return could give the wrong image on actual rate of return on investments.

Key words: *pigs fattening, IRR, MIRR, cost of capital.*

JEL: *G31, Q12, Q14*

---

2   Sanjin Ivanović, Ph.D., Associate Professor, Faculty of Agriculture, Belgrade University, Nemanjina Street no. 6, 11080 Zemun, Serbia, Phone: +381 11 261 53 15/int. 426, E-mail: sanjinivanovic@agrif.bg.ac.rs

3   Lana Nastić, M.A., Research Associate, Institute of Agricultural Economics, Volgina Street no. 15, 11060 Belgrade, Serbia, Phone: +381 11 697 28 52, E-mail: lana_n@iep.bg.ac.rs

4   Bojana Bekic, B.Sc., Research Associate, Institute of Agricultural Economics, Volgina Street no. 15, 11060 Belgrade, Serbia, Phone: +381 11 697 28 52, E-mail: bojana_b@iep.bg.ac.rs

Introduction

Net cash flow of investments in agriculture can vary because of different reasons. Investments in agricultural production are a group of highly risky investments, because expected effects may greatly depend on environmental conditions, on which the investor cannot influence or this influence is limited. It refers mainly on investments in crop production, fruit production and viticulture, where impact of natural factors is highly expressed. However, risks of crop production are transferred to investments in livestock breeding trough fodder expenses. Besides risks caused by natural factors, in Serbia there are great risks related to changes of input prices or finished products. All of the above risks are reflected in variations of the amount of net cash flow received from investments. Other possible reasons of net cash flow variations in agriculture are biological characteristics of production process, which cannot be influenced on, or the influence of production manager is relatively small. The same consequences can also be caused by production process organization. Good example are various types of fattening (beef, pigs, broilers), where in different years, different number of animals are sold, so net cash flow greatly varies from one year to another (in some years it can be positive and in other negative).

These variations of net cash flow may have great impact on indicators of economic effectiveness of investments, especially Internal Rate of Return (IRR). Unlike Net Present Value (NPV), which is the absolute indicator of economic effectiveness of investments, IRR represents relative indicator (expressed in percent). While discount rate reflects minimal required interest rate of invested assets, IRR shows actual interest rate of invested assets. That is, IRR is a discount rate where NPV of investment is zero.

Evaluation of economic effectiveness of investments using IRR method is conducted by comparing discount rate and determined IRR. The rule is, if IRR is higher than discount rate than NPV of investment is positive, so investment is economically acceptable. That is, if IRR is higher than discount rate, than actual interest rate of invested assets is higher than cost of capital.

However, use of IRR is related to certain problems and objections, where the most important are:

- IRR method cannot be applied in cases where during investment use (except for initial cash outflow) the negative net cash flows appeared,
- Theoretical stand is questionable (as starting point when calculating internal rate of return) regarding reinvesting rate of net cash flow, released from the investment. The assumption is that reinvestment rate equals to IRR. More realistic assumption is that the reinvestment rate is equal to discount rate (Garrison et al., 2006).

Obviously, there are significant objections regarding the IRR method, which can lead to wrong results of investment analysis, and therefore to bad business decisions. First objection, that this method cannot be used if there are frequent changes of net cash flow from positive to negative, and vice versa, is based on the fact that then IRR loses its usability. Namely, then there are multiple solutions, that is several IRRs (Rosen, 1995).

That is, exact number of IRRs depends on number of cash flow changes from positive to negative (Brealey, Myers, 2003).

Appearance of multiple solutions (IRRs) is caused by type of formula for calculation of the internal rate of return. It is polynomial, and therefore there are n possible solutions. In the case of normal cash flow (which considers one initial cash outflow and later constant positive cash flows) all solutions, except one, are imaginary numbers. Of course, when there are multiple solutions, they have no practical importance and they should not be considered.

Aiming to solve the problem of multiple IRRs, some improvements of this method were introduced in economic theory, and that led to definition of Modified Internal Rate of Return (MIRR). This new method solved not only the problem of multiple IRRs, but also other major imperfection of IRR – unrealistic assumption about the reinvesting rate of net cash flow. Traditionally, when calculating IRR, it was assumed that net cash flow of investment was reinvested under the same rate of IRR. However, if IRR is too high, than it cannot be expected to reinvest net cash flow under such high interest rate. On the other hand, establishment of MIRR is based on the assumption that net cash flow is reinvested per costs of capital (the same case as calculating investment's NPV). It is considered that this new approach has significant advantage, in compare to the classical method of calculating IRR. Therefore it is a better indicator of actual rate of return of invested assets. This indicator gives lower rate of return than classical IRR, and cannot cause overestimation of rate of return. But MIRR method also has its disadvantages, such as determination of accurate reinvestment rate (Green, 1991).

Shim et al. (2008) emphasize that MIRR overcomes the disadvantage of IRR regarding of mutually exclusive projects. Fabozzi et al. (2008) explained that both IRR and MIRR ignore the scale of the investment. Therefore, in the case of mutually exclusive projects, they may lead to an incorrect decision. Cary and Dunn (1997) demonstrate how MIRR can be adjusted to give rankings of mutually exclusive projects that are consistent with NPV. Satyasai (2009) demonstrated application of modified IRR method coupled with adjustment for scale and time span differences using data for four watersheds. Mackevičius and Tomaševič (2010) discussed in detail specific technique for resolving NPV and IRR conflict. Rousse (2008) suggested possibilities for solution of some specific problems related to calculation of MIRR (issues connected to cost of capital and uncertainty).

Application of MIRR method for evaluation of investments in agriculture, in our conditions, was researched only by Ivanović (2008), Gogić (2011), Ivanović (2013), and Gogić and Ivanović (2013). MIRR method is almost ignored in significant and highly respected textbooks, and usually avoided by executives because it is considered difficult to understand and compute Kierulff (2008). Having in mind misuse of IRR in practice, it is needed to pedagogically emphasize the superiority of the NPV and MIRR decision rules (Balyeat et al., 2013).

Therefore this paper aims to present MIRR methodology in detail, to describe its advantages over IRR method, as well as the possibility of its application in agriculture. In that sense, an example of investing in pigs fattening is going to be used, because this production is known

for cyclic changes of net cash flows. This topic is significant because it is impossible to use IRR methodology for investment valuation if net cash flow changes its sign from positive to negative multiple times.

Material and Method

In paper authors used model of family farm which invest in pigs fattening facility with capacity of 100 heads per production cycle. Fattening is done from 25 kg to 105 kg of weight. After that, pigs are sold at market. For the need of this analysis, authors used their internal documentation as well as STIPS database (System of Agricultural Market Information of Serbia). All cash inflows and outflows are calculated on the basis of market price. Feed used in pigs fattening is purchased on market. The most important elements of feed are corn and soybean meal. It is also supposed that family farm uses state subsidies for pigs fattening.

Calculation of MIRR will be done using formula of Brigham and Gapenski (1997). This formula is based on the assumption that negative cash flow appears not only at the beginning of investing process (once when investment facility is purchased), but also later during investment use:

$$\sum_{t=0}^{n} \frac{COF_t}{(1+k)^t} = \frac{\sum_{t=0}^{n} CIF_t (1+k)^{n-t}}{(1+MIRR)^n}$$

Where: COF – cash outflows; CIF – cash inflows; k – cost of capital; $MIRR$ – modified internal rate of return; n – years of investment use; and t – individual year of investment use.

Modified internal rate of return is defined as discount rate, which, as stated by Barry et al. (2000), equates present value of cash outflows with future value of cash inflows. Using MIRR it is important to remember that selection of the moment for which cash surplus will be discounted is of no relevance in only one case, i.e. when MIRR equals IRR (Merlo, 2013).

Results and discussion

Amount and structure of investments in pigs fattening are shown in Table 1, cash inflows, cash outflows and net cash flow are shown in Table 2. When calculating net cash flow, interest costs and depreciation were not included in cash outflow. It can be seen that net cash flow (in the moment of investing) is negative and also in the first, fourth and seventh year of investment use. That is why, for estimation of economic effectiveness of investments, MIRR must be used instead of IRR.

Table 1. Amount and structure of investments in pigs fattening

Item	Amount (EUR)	Structure (%)
Buildings	28,100.00	62.90
Equipment	5,600.00	12.53
Working assets	10,974.93	24.57
Total	**44,674.93**	**100.00**

Source: Authors' calculation according to Ivanović, 2014; STIPS, 2014.

Table 2. Cash inflows, cash outflows and net cash flow (salvage value of investment is not included in last year), (EUR)

Indicators	Year									
	1	2	3	4	5	6	7	8	9	10
Cash inflows	**31,486.00**	**47,229.00**	**47,229.00**	**31,486.00**	**47,229.00**	**47,229.00**	**31,486.00**	**47,229.00**	**47,229.00**	**47,229.00**
Revenue from sold pigs	29,820.00	44,730.00	44,730.00	29,820.00	44,730.00	44,730.00	29,820.00	44,730.00	44,730.00	44,730.00
Subsidies for pig fattening	1,666.00	2,499.00	2,499.00	1,666.00	2,499.00	2,499.00	1,666.00	2,499.00	2,499.00	2,499.00
Cash outflows	**33,963.83**	**34,709.33**	**30,134.33**	**33,963.83**	**34,709.33**	**30,134.33**	**33,963.83**	**34,709.33**	**30,134.33**	**34,709.33**
Fodder costs	14,721.58	14,721.58	14,721.58	14,721.58	14,721.58	14,721.58	14,721.58	14,721.58	14,721.58	14,721.58
Water	46.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00
Piglets	13,725.00	13,725.00	9,150.00	13,725.00	13,725.00	9,150.00	13,725.00	13,725.00	9,150.00	13,725.00
Veterinarian services	1,350.00	1,350.00	1,350.00	1,350.00	1,350.00	1,350.00	1,350.00	1,350.00	1,350.00	1,350.00
Electricity	104.00	104.00	104.00	104.00	104.00	104.00	104.00	104.00	104.00	104.00
Maintenance of buildings	70.25	70.25	70.25	70.25	70.25	70.25	70.25	70.25	70.25	70.25
Maintenance of equipment	56.00	56.00	56.00	56.00	56.00	56.00	56.00	56.00	56.00	56.00
Insurance for pigs fattening	1,491.00	2,236.50	2,236.50	1,491.00	2,236.50	2,236.50	1,491.00	2,236.50	2,236.50	2,236.50
Labor	2,400.00	2,400.00	2,400.00	2,400.00	2,400.00	2,400.00	2,400.00	2,400.00	2,400.00	2,400.00
Net cash flow	**-2,477.83**	**12,519.68**	**17,094.68**	**-2,477.83**	**12,519.68**	**17,094.68**	**-2,477.83**	**12,519.68**	**17,094.68**	**12,519.68**

Source: Authors' calculation according to Ivanović, 2014; STIPS, 2014.

To determine NPV of this investment (Table 3) authors used net cash flow from Table 2 and discount rate of 8% that is formed in model as weighted average cost of capital (WACC). Considering that NPV is positive, this investment is economically acceptable.

Table 3. Calculation of NPV in pigs fattening

Year	Net cash flow (EUR)	Discount factor (8%)	Discounted NCF (EUR)
0	44,674.93*	1.0000	-44,674.93
1	-2,477.83	0.9259	-2,294.28
2	12,519.68	0.8573	10,733.60
3	17,094.68	0.7938	13,570.30
4	-2,477.83	0.7350	-1,821.28
5	12,519.68	0.6806	8,520.68
6	17,094.68	0.6302	10,772.54

Year	Net cash flow (EUR)	Discount factor (8%)	Discounted NCF (EUR)
7	-2,477.83	0.5835	-1,445.79
8	12,519.68	0.5403	6,763.99
9	17,094.68	0.5002	8,551.59
10	44,569.61**	0.4632	20,644.35
Net present value			29,320.79

Source: Authors' calculation according to Ivanović, 2014.
Note: *Initial cash outflow, ** Includes net cash flow and salvage value of investment.

Entire process of calculation of MIRR (Table 4) begins by discounting of cash outflows at the moment of investing (moment of initial cash outflow creation). It is done by discount rate application, calculated on the basis of costs of capital. On the other hand, determination of total future value of cash inflows is done, assuming that inflows are reinvested at the cost of capital (Brigham and Gapenski, 1997).

Table 4. Calculation of MIRR

Year	Net cash flow (EUR)	Discounting		Compounding	
		Discount factor (8%)	Discounted negative cash flow	Compounding factor (8%)	Compounded positive cash flow
0	-44,674.93	1.0000	44,674.93	2.1589	
1	-2,477.83	0.9259	2,294.28	1.9990	
2	12,519.68	0.8573		1.8509	23,173.04
3	17,094.68	0.7938		1.7138	29,297.27
4	-2,477.83	0.7350	1,821.28	1.5869	
5	12,519.68	0.6806		1.4693	18,395.51
6	17,094.68	0.6302		1.3605	23,257.12
7	-2,477.83	0.5835	1,445.79	1.2597	
8	12,519.68	0.5403		1.1664	14,602.95
9	17,094.68	0.5002		1.0800	18,462.25
10	44,569.61	0.4632		1.0000	44,569.61
Total			50,236.28		171,757.74

Source: Authors' calculation according to Ivanović, 2014.

By application of approximate interest rates and linear interpolation, it is determined that MIRR is 13.08%. That is, as stated by Peterson and Fabozzi (2002), MIRR is a return on the investment, assuming a particular return on the reinvestment of cash flows. Having in mind that MIRR is higher than cost of capital (8%) this means that the investment is expected to return more than required, and should be accepted.

In this analysis cost of capital (8%) is determined as WACC. It was assumed that equity opportunity cost is 4% while interest rate for loan is 12% (investment is financed 50% by equity and 50% by loan). It is important for MIRR that its height depends on height of cost of capital. Therefore MIRR will defer if the investment is financed only by equity or by loan (Table 5).

Table 5. MIRR for various costs of capital

Cost of capital	Modified internal rate of return	Net present value (EUR)
4%	11.43%	50,782.35
8%	13.08%	29,320.79
12%	14.80%	13,901.35
16%	16.60%	2,594.07
17%	17.06%	251.55
18%	17.52%	-1,929.54

Source: Authors' calculation according to Ivanović, 2014.

It is obvious that investment in pigs fattening is economically acceptable for all assumed financing methods (between 4% and 12%). The investment would be economically unprofitable only if cost of capital is higher than 17%. On the other hand, it is necessary to conduct additional analysis to check weather investment is financially feasible or not.

Conclusion

MIRR method is not sufficiently present in academic papers and in practice. Therefore it is necessary to pedagogically emphasize the superiority of this method over IRR method. Primarily MIRR method should be used for evaluation of projects with cash flows which could lead to multiple IRRs, which is common in agriculture. An example of analysis of economic effectiveness of investment in pigs fattening showed that this investment is economically acceptable, because MIRR (13.08%) was higher than cost of capital (8%). Besides, changes of MIRR, for various amounts of costs of capital, were determined. The investment in pigs fattening is profitable if discount rate (cost of capital) is not higher than 17%.

References

1. Balyeat, R. B., Cagle, J., Glasgo, P. (2013): *Teaching MIRR to Improve Comprehension of Investment Performance Evaluation Techniques*, Journal of Economics and Finance Education, vol. 12, no. 1, pp. 39-50.

2. Barry, J. P., Ellinger, N. P., Hopkin, A. J., Baker, B. C. (2000): *Financial Management in Agriculture*, Sixth Edition, Interstate Publishers Inc. Danville, Illinois, USA.

3. Brealey, R. A., Myers, S. C. (2003): *Capital Investment and Valuation*, McGraw-Hill, NY, USA.

4. Brigham, F. E., Gapenski, L. C. (1997): *Financial Management – Theory and Practice*, Eight Edition, the Dryden Press, NY, USA.

5. Cary, D., Dunn, M. (1997): *Adjustment of Modified Internal Rate of Return for Scale and Time Span Differences*, Allied Academies International Conference, Proceedings of the Academy of Accounting and Financial Studies, vol. 2, no. 2, Maui, Hawaii, pp. 57-63.

6. Fabozzi, F. J., Drake, P. P., Polimeni, R. S. (2008): *The Complete CFO Handbook: From Accounting to Accountability*, John Wiley & Sons, NY, USA.

7. Garrison, R. H., Noreen, E. W., Brewer, P. C. (2006): *Managerial Accounting*, Eleventh Edition, McGraw-Hill/Irwin, Boston, USA.

8. Gogić, P. (2011): *Ekonomska efektivnost investiranja u hidromelioracije*, Monograph, University in Belgrade, Faculty of Agriculture, Belgrade.

9. Gogić, P., Ivanović, S. (2013): *Economics and Financial Analysis of Investments in Raspberry Plantations,* Proceedings of the seminar: Agriculture and Rural Development Challenges of Transition and Integration Processes, University of Belgrade, Faculty of Agriculture, Department of Agricultural Economics, September, 27th 2013, Belgrade, pp. 1-11.

10. Green, M. G. (1991): *A standard method of property performance measurement*, Investment Analysts Journal, spring 1991, pp. 7-19, available at: http://www.iassa. co.za/articles/034_spr1991_01.pdf

11. Ivanović, S. (2008): *Ekonomska efektivnost investicija u govedarskoj proizvodnji porodičnih gazdinstava*, PhD. Thesis, University in Belgrade, Faculty of Agriculture, Belgrade.

12. Ivanović, S. (2013): *Analiza investicija u stočarskoj proizvodnji*, Monograph, University in Belgrade, Faculty of Agriculture, Belgrade.

13. Ivanović, S. (2014): *Documentation on costs and investments in pigs fattening,* Internal unpublished documentation of author, Belgrade.

14. Kierulff, H. (2008): *MIRR: A better measure*, Business Horizons, vol. 51, no. 4, pp. 321-329.

15. Mackevičius, J., Tomaševič, V. (2010): *Evaluation of Investment Projects in Case of Conflict between the Internal Rate of Return and the Net Present Value Methods*, Ekonomika, vol. 89, no. 4, pp. 116-130.

16. Merło, P. (2013): *Implications of discounting methods and relations between NPV, IRR and MIRR for efficiency evaluation of investment projects,* Humanities and Social Sciences, vol. XVIII, no. 20(3), pp.103-117.

17. Peterson, P. P., Fabozzi, F. J. (2002): *Capital Budgeting: Theory and Practice*, John Wiley & Sons, NY, USA.

18. Rosen, L. R. (1995): *Handbook of Interest, Yields, and Returns,* McGraw-Hill Inc., NY, USA.

19. Rousse, O. (2008): *On the bias of yield-based capital budgeting methods*, Economics Bulletin, vol. 7, no. 9, pp. 1-8.

20. Satyasai, K. J. S. (2009): *Application of Modified Internal Rate of Return Method for Watershed Evaluation*, Agricultural Economics Research Review, no. 22, pp. 401-406.

21. Shim, J. K., Siegel, J. G., Dauber, N. (2008): *Corporate Controller's Handbook of Financial Management*, CCH a Walters Kluwer Business.

22. STIPS (2014), database of System of Agricultural Market Information of Serbia, STIPS,

Ministry of Agriculture and Environmental Protection of the Republic of Serbia, Belgrade, available at: http://www.stips.minpolj.gov.rs/, accessed at: October 2014.

MOGUĆNOSTI PRIMENE MIRR METODA ZA OCENU INVESTICIJA U POLJOPRIVREDI: PRIMER TOVA SVINJA

Sanjin Ivanović[5], *Lana Nastić*[6], *Bojana Bekić*[7]

Abstract

Kod nekih investicija u poljoprivredi često *se javlja situacija da neto novčani tok menja svoj znak iz pozitivnog u negativni više puta u toku trajanja projekta. To izaziva problem izračunavanja interne kamatne stope, koja je važan indikator ekonomske efektivnosti investicija. Odnosno, u takvim uslovima se interna kamatna stopa ne može koristiti. Da bi se rešio taj problem primenjuje se modifikovana interna kamatna stopa. Cilj ovog rada je da se detaljno opiše ova metoda i prikaže njen način izračunavanja kod investicije u tov svinja. Primenom modifikovane interne kamatne stope utvrđeno je da je tov svinja pod pretpostavljenim uslovima ekonomski opravdan. Takođe je izračunata i gornja granica diskontne stope (troškova kapitala) do koje je investicija u tov svinja ekonomski opravdana. Zaključeno je da kod specifičnih investicija u poljoprivredi (kao* što *je to tov svinja) upotreba tradicionalne interne kamatne stope može pružiti pogrešnu sliku o stvarnoj stopi povraćaja na investiciona ulaganja.*

Ključne reči: *tov svinja, interna kamatna stopa, modifikovana interna kamatna stopa, diskontna stopa*

5   Prof. dr Sanjin Ivanović, vanredni profesor, Poljoprivredni fakultet, Univerzitet u Beogradu, Nemanjina 6, 11080 Zemun, Srbija, Telefon: +381 11 261 53 15/lokal 426, E-mail: sanjinivanovic@agrif.bg.ac.rs

6   Lana Nastić, M.A., istraživač saradnik, Institut za ekonomiku poljoprivrede, Volgina 15, 11060 Beograd, Srbija, Telefon: +381 11 697 28 52, E-mail: lana_n@iep.bg.ac.rs

7   Bojana Bekic, B.Sc., istraživač saradnik, Institut za ekonomiku poljoprivrede, Volgina 15, 11060 Beograd, Srbija, Telefon: +381 11 697 28 52, E-mail: bojana_b@iep.bg.ac.rs

CONSUMERS' ATTITUDES, KNOWLEDGE AND CONSUMPTION OF PRODUCTS WITH NUTRITION AND HEALTH CLAIMS[1]

Sanja Mitić[2], Mirjana Gligorijević[3]

Summary

The paper presents the selected results of consumers' study of food products in Serbia. It focuses on the products with nutrition and health claims (NHCs) and the analysis of the main consumers' characteristics which influence their awareness and knowledge about NHCs, their attitudes toward products with NHC and their purchase intentions. Different socio-demographic factors that influence consumers' behavior were investigated. Education, gender, age and income of the respondents are the key factors which influence awareness, knowledge and consumption. As those products are closely related to consumers' health, we presented the results based on the differences in health status of the respondents. Main findings show that the respondents with health problems do not consume those products as often as others, which is the outcome of a low level of nutrition knowledge. This represents a major restraining factor for the increase in consumption. After identifying the characteristics of demand, we have suggested some proposals for managers, aimed at overcoming the identified problems, and for government institutions so as to obtain a proactive approach to improving the overall health of the population.

Key words: *health claim, nutrition claim, food labels, nutrition knowledge, consumer behavior.*

JEL: *I18, M31, Q13*

Introduction

Public health and healthy nutrition concerns represent a significant political and economic matter in developed countries, whereas in the underdeveloped countries they constitute existence issues. Food has become the main issue in public debates and in political activities. Consumers' trust in food producers and authorities to protect them has eroded. This is the consequence of a widespread suspicion and the lack of important information related to food labeling.

---

2   Sanja Mitić, Ph.D., Assistant Professor, Faculty of Economics, Belgrade University, Kamenička Street no. 6, Belgrade, Serbia, Phone: +381 11 302 11 75, E-mail: sanja@ekof.bg.ac.rs

3   Mirjana Gligorijević, Ph.D., Full Professor, Faculty of Economics, Belgrade University, Kamenička Street no. 6, Belgrade, Serbia, Phone: +381 11 30 21 019, E-mail: miragli@sezampro.rs

This paper focuses on consumers' perception and attitudes toward food labels, with the focal point on nutrition and health claims. Nutrition and health claims (NHCs) should have a positive influence on consumers' perception of the effects of food products on their health, as well as on the changes in consumption patterns and diet preferences.

The main aim of this study is to examine the characteristics of the demand for NHCs product market in Serbia. Several major aspects shall be examined: consumers' awareness of products with NHCs, nutrition knowledge, attitudes toward nutrition and health labeling, attitudes toward products with NHCs and the consumption of those products. As it is shown in the literature, those are important variables that explain consumers' behavior regarding products with NHCs. This paper is organized into five parts. The section following the introduction presents the literature review concerning consumers' food choice behaviors and studies that deal with nutrition and health claims issues. We will define nutrition and health claims, based on the EU regulations, pointing out several major contributions from international studies and describing key findings of researches conducted within Serbian market. After that, methodology of the research will be presented and followed by main research findings regarding consumers' awareness, knowledge, attitudes and consumption of products with NHCs. In the final section, we will discuss the findings and policy, and managerial implications of the results.

The literature review

The most important point for developing successful marketing strategies in the food sector is understanding the diversity of consumer needs and motives. There are three functions of food: a nutritional function, which is essential for human survival, a sensory function which involves both flavor and texture meant to satisfy sensory needs, and physiological functions such as biorhythm regulation, aging control, the immune system, and body defense (Shimizu, 2003).

The global food market is confronted with a number of ongoing challenges. The key challenges are the rise of health concerns and global obesity epidemic, especially in the developed countries. Producers and retailers are in a position to revise their strategies in order to meet and satisfy changing consumer needs and global market development trends. The trends in the demand for food are shaped by demographic changes and evolving consumer lifestyles. The most important demographic changes are the ageing population, urbanization, smaller households, a rising number of women who work and declining birth rates. At the same time, there is an ongoing trend of a healthy lifestyle and healthy nutrition within which some groups of consumers have a tendency to substitute traditional food products with the healthier ones.

Food choices determine consumers' nutrient intake and influence food production systems. A food choice is a complex process that involves many different factors, including sensory and non-sensory characteristics. Individual food consumption and buying choice can be explained by various factors, such as household and individual characteristics, ability to process information and valuation of health. Sanlier and Karakus (2010) emphasize that there

are two factors that affect the food choices of consumers: (1) consumer-related factors which include health considerations, sensory variables, social interactions, familiarity and habit, psychographics and demographics; and, (2) the most important, market-related issues which include price, distribution and promotion.

There is a lot of research in literature regarding various factors influencing eating habits and preferences. Most of them emphasize the importance of socio- demographic and economic factors in an attempt to explain consumer food behavior. In Western countries, women eat more healthily than men (Næs et al., 2001), and highly educated people more than less educated people (Niva, 2006). Regarding age, studies show that older people are more willing to adopt eating habits in accordance with recommendations than young people (Niva, 2006). What is more, concerns about health in general and healthy eating increase with age. Also the presence of children in the family influence nutritional quality of diet (Niva, Mäkelä, 2005; Roos, 1998). Based on the basic proposal in the identified studies, mainly conducted in the developed countries, we want to explore the influences of socio-demographic factors in the case of Serbia, with the focus on products with special forms of nutrition and health labeling.

Food labeling, as an important factor of consumers' decision-making, has received a lot of attention in the literature. Labels on food products are used as a marketing instrument in order to ensure effective market positioning related to health issues. Using various types of food labels, producers are oriented toward communicating positive health influences of their products and the promotion of a healthy lifestyle. As a basic type of food labels we have recognized nutrition and health claims, based on the EU regulations. Due to the EU regulation 1924/2006, a nutrition claim is the claim which states or implies that food has particular beneficial nutritional properties due to the energy and/or nutrients or other substances it provides/contains, provides/contains in reduced or increased level, or does not provide/contain (Article 2, REG. (EC) No 1924/2006). A health claim is defined as a statement that shows that the relationship between food or particular ingredient and health exists. There are three types of health claims: (1) functional claims (describe: " the role of a nutrient or other substance in a) growth, development and functions of the body; (b) psychological and behavioral functions; or (c) slimming or weight control" (Article 13, REG. (EC) No 1924/2006)), (2) risk reduction claims ("claims that state, suggest or imply that the consumption of a food category, a food or one of its constituents significantly reduces a risk factor in the development of a human disease", (Article 2, REG. (EC) No 1924/2006)) and (3) health claims referring to children's development.

Nutrition and health claims should have a positive influence on consumers' perception of health effects of food products and on changes in consumption patterns and diet preferences. We can identify several positive influences of food labels, regarding a higher sale of a particular product, as well as the product category. Also, consumers are better informed about food characteristics and influences of some nutrients on health and/or a specific function of the body. Food labels can improve consumers' nutrition knowledge, which is a significant factor in diet changes, in order to maximize health benefits, which is especially important for consumers with some health related problems. In the literature we can find many studies that provide empirical evidence of a positive impact of the food label usage

on the consumer food choice and purchasing behavior (Shine et al., 1997; Ford et al., 1996; Chan et al., 2005; Baltas, 2001). Regarding the researches on nutrition and health claims, the main conclusion is that consumers value products with claims more than products with no claims, and prefer them (Lalor et al., 2010). Moreover, both health claims and nutrition information influence beliefs about product healthfulness (Ford et al., 1996). Kozup and associates (2003) found that favorable nutrition information or health claims result in consumers more favorable attitudes toward the product, nutrition attitudes, and purchase intentions. On the other hand, some consumers often see claims as a form of promotion and this is why some studies show that consumers rely more on the nutrition panel than claims. The scientific literature in this field is mostly based on studies conducted in the USA and other developed countries in the EU.

In recent years there have been some studies that look into the issue of consumer behavior in food market in Serbia, primarily in the area of motives for the food choice, based on Food Choice Questionnaire (Milošević et al., 2012; Gagić et al., 2014). As regards studies that address the issue of products with health and/or nutrition claims in Serbia, there are several important contributions. Žeželj and associates (2012) explored the impact of the food choice motive, nutrition knowledge and usage of food labels on the attitude toward the food with health claims in six Western Balkan countries. The main results are in accordance with the findings of the studies in western European countries. Nutrition knowledge of consumers as well as trust in labels and the usage of information on labels in the process of decision-making were identifies as the main influences on consumers' attitudes toward the food and health claims.

Apart from quantitative researches, there are some qualitative studies addressing the issue of Serbian consumers› perception of the products with a nutrition and health claim. Based on focus groups, Mitić and Gligorijević (2012) found that, in general, consumers in Serbia understand the link between food and health, but they expressed a certain level of skepticism toward nutrition and health claims on food products. There are differences among various consumers groups regarding the attitudes toward food labels. The most important one is the difference between the respondents with different health status, due to a lower level of understanding and usage of food labels in the case of the respondents with health problems.

Another relevant area of research regarding the food with nutrition and health claims (NHCs) deals with the regulatory issue concerning product labeling and usage of nutrition and health claims by producers. In the EU, USA, Japan and other developed countries there are strict rules for using health and nutrition claims on food products.[4] In Serbia, the regulatory

---

4 Aiming to ensure greater clarity and certainty for economic operators, EU Commission issued guidelines for the implementation of specific conditions for health claims, regarding prohibition of unauthorised health claims, mandatory information accompanying authorised health claims, reference to general, non-specific health benefits and the rules for applications concerning the use of generic descriptors (denominations), (European Commission, Health and nutrition claims, http://ec.europa.eu/food/food/labellingnutrition/claims/index_en.htm)

framework of food labeling does not address the issue of health claims, while the policy concerning nutrition claims is not fully harmonized with the EU legislation.

This regulatory issue in Serbian market was not widely examined in academic studies. In general, the absence of regulatory framework can influence the development of NHCs food market, and the presence of a negative impact of false and misleading claims on consumer skepticism, which has already been identified in the case of Serbian consumers (Mitić, Gligorijević, 2012). The absence of the legislative provides a lot of space for an excessive usage of various nutrition and health claims on food products in Serbia. Numerous health claims are in use (especially risk reduction claims in two groups of products: juices and cereals) without any scientific verification, which undermines the value and importance of health claims in general (Mitić et al., 2013). The lack of legislative in the area provides an opportunity for producers to manipulate consumer choice, by using non-specific, general health claims (Stojanović, Dragutinović Mitrović, 2012) that are imprecise and incomplete. Comparing to other Western Balkan countries, NHCs food product market in Serbia is underdeveloped and producer rather than consumer driven (Stojanović et al., 2010), possibly due to a high level of consumers' skepticism.

The main aim of this study is to examine the characteristics of the demand for NHCs product market. Based on the identified shortcomings in the literature regarding consumers' role in the developing NHCs product market in Serbia, we wanted to identify the influences of consumers' characteristics on their awareness and knowledge about NHCs, their attitudes toward products with NHC and their purchase intentions. Identifying the main distinctions between consumers with different attitudes and purchase intentions can help in discovering the main barriers and obstacles in further development of the market. This is especially important for individuals with some health problems, having in mind that those products can have a positive influence on health and functioning of the human body.

Methodology

We conducted a survey within a sample of 913 respondents in Serbia, during 2013. We used the Kish grid as the sampling technique. The questionnaire was structured into several parts, addressing consumers' preferences toward food, food labels, traditional food products and products with nutrition and health claims. In this paper we will examine only specific aspects of consumers' attitudes toward products with nutrition and health claims. We used the results of *Food Choice Questionnaire* and the results regarding consumers' attitudes toward food labels (whether they read labels regularly and whether they believe in their truthfulness) from the first two parts of the questionnaire in order to discuss the results. Basic structural elements of the sample are presented in Table 1 below.

Table 1. Demographic characteristics of the sample

Characteristics of respondents		Number of respondents	% of respondents
Total		913	100
Gender	Female	492	53.9
	Male	420	46.1
Age	Younger than 30	185	20.3
	Aged between 30 and 55	405	44.4
	Older than 55	323	35.4
Education	No education	20	2.21
	Primary education	130	14.33
	Secondary education	516	56.89
	Higher education	83	9.15
	High education	158	17.42
Household income	No income	26	2.86
	Less than 20.000 rsd	96	10.56
	Between 20.000 and 40.000 rsd	237	26.07
	Between 40.000 and 80.000 rsd	340	37.4
	Between 80.000 and 120.000 rsd	150	16.5
	More than 120.000 rsd	60	6.6

Source: Authors' calculation according to data from Mitić, Gligorijević, 2013.

Apart from the demographic information about the respondents, we also collected the information about the health status of the respondents. As the topic of health and nutrition characteristics of products is closely connected to human well-being and health, we introduced two additional questions: (1) do the respondents have a chronic illness and (2) what is their overall health status, self-evaluation on a 5-item scale (very bad health, bad health, average health, good health, excellent health).

The structure of the sample regarding health related questions shows that 34% of the respondents have a chronic health problem (66% of the respondents did not report a chronic illness), while the frequencies for the overall health status are presented in Table 2.

Table 2. Overall health status of the respondents

5-item scale	Number of respondents	% of respondents
very bad health	4	0.4
bad health	35	3.8
average health	335	36.8
good health	417	45.8
excellent health	120	13.2

Source: Authors' calculation according to data from Mitić, Gligorijević, 2013.

The results are presented based on descriptive statistics with some statistical testing, and factor analysis.

Results

Consumers' behavior regarding products with nutrition and health claims is examined in four parts: (a) awareness and knowledge, (b) perceived importance of nutrition and health labeling, (c) attitudes toward products with nutrition and health claims, and (d) consumption of products with nutrition and health claims (actual consumption and intention to consume).

Awareness and knowledge

Consumers' awareness of the products with NHCs represents an important antecedent of nutrition knowledge (Bornkessel et al., 2014). Awareness and nutrition knowledge can influence attitudes and the level of consumption of those products. Regarding consumer's awareness of products with NHC, we found that 30% of the respondents are not well-informed about the products with nutrition and health claims, while only 15% find themselves very well-informed about those products. Majority of the respondents (45.5%) expressed a medium level of awareness of the products with nutrition and health claims. Statistically significant differences exist between the respondents in terms of their socio-demographic characteristics and health status. The most important differences in socio-demographic factors are concerned with gander, age, economic status, and level of education.

Women show higher awareness of those products than men (t=-3.519, p=0.000), as well as the respondents from households with higher economic standard (F=3.715, p=0.002), respondents with higher level of education (F=14.073, p=0.000) and respondents younger than 30 (in comparison with the respondents in the middle age group, ages between 30 and 55 , and the oldest ones, who express a lower level of awareness) (F=8.593, p=0.000). Those results are comparable with the result of some similar studies carried out in the developed countries (Bornkessel et al., 2014).

Regarding health status, we also found relevant differences in two sections: (i) the respondents that have a chronic illness (in further text we will call them the vulnerable group of the respondents) express a lower level of awareness than others (statistically significant differences: t=2.316, p=0.021); (ii) based on self-evaluated overall health, we found statistically significant differences among five groups of respondents (respondents with very bad health, bad health, average health, good health, excellent health) (F=8.467, p=0.000); again, the respondents with better health are more aware of products with NHCs.

The results related to the health status of the respondents are alarming. As those products can have a positive impact on health, it is important to increase consumers' level of awareness.

The second group of questions is dedicated to nutrition knowledge. Consumers' knowledge about food represents an important determinant of food choice. In the case of products with nutrition and health claims, nutrition knowledge is the most important, as knowledge about the characteristics of some nutrients, their natural sources and their impact on health. We evaluated knowledge with the help of 10 questions (see table 3), regarding the influence of some nutrition ingredients on health (vitamin D, C, folic acid, salt, polyunsaturated and saturated fats), sources of nutrients (vitamin D, folic acid, polyunsaturated fats) and their role

in metabolic processes (vitamin A, carbohydrates, calcium).

In general, respondents express a low level of knowledge. Only 3% of the respondents had more than seven correct answers, 25% of the respondents answered correctly on less than five questions (10% answered correctly on 2 or 3 questions). Most of the respondents are in the group of those with 5 or 6 correct answers (48%). Nutrition knowledge differs in the case of different socio-demographic characteristics of respondents. There are statistically significant differences regarding age and education of the respondents, household income, but also regarding the health status of the respondents or their family members. Among the oldest respondents we found the largest share of those with a low level of nutrition knowledge, while the highest level of knowledge was demonstrated by the middle age group (the respondents between 30 and 55 years) (F=4.138, p=0.016). Nutrition knowledge is positively related to the level of education (F=8.588, p=0.000), as well as to household income (F=5.895, p=0.003).

Table 3. Nutrition knowledge

Questions	% of correct answers
1. Vitamin A helps in Calcium absorption.	49.4%
2. Vitamin C is a good treatment for a cold.	98.7%
3. Folic acid helps in fighting leukemia.	48.5%
4. Vitamin D helps fight osteoporosis	81.3%
5. Carbohydrates turn to sugar and nourish the body.	75.4%
6. Polyunsaturated fats increase cholesterol levels more than saturated fats.	4.3%
7. High blood pressure risk can probably be reduced with low sodium diet.	95.4%
8. Folic acid is found in root vegetables.	4.6%
9. Vitamin D is found in milk.	73.4%
10. Polyunsaturated fatty acids are found in olive oil.	60.1%

Source: Authors' calculation according to data from Mitić, Gligorijević, 2013.

When it comes to health status, we have similar results as in the previous section. The group of respondents with some chronic health problems (the vulnerable group) express a lower level of nutrition knowledge than the respondents without a chronic illness (F=4.995, p=0.007). Also, there is a similar relationship between self-evaluated overall health status and nutrition knowledge. Those results were not expected. As an outcome of health problems, we expected that the respondents would show a higher interest in nutrition, especially the respondents with chronic illnesses whose therapy is closely connected with changes in their lifestyle and nutrition. Conversely, in our sample, respondents with no health problems expressed better nutrition knowledge as well as a higher level of awareness of products with NHCs. There are two possible explanations. Firstly, that better health status is connected with a more balanced nutrition as an outcome of a better nutrition knowledge and awareness of products with NHCs. The second explanation is based on the socio-economic characteristics and differences of the two groups of respondents. Bad health status is more often found with the respondents in the group of those with the lower level of education and lower household income. Barring in mind that the level of education is one of the most important variables that

explain nutrition knowledge, the results for the vulnerable group can be understood from the perspective of education of the respondents. Examining the additional question concerned with the existence of a chronic illness issue of other household member, the results are the same as the previous one.

The importance of nutrition and food labeling

In the next section we analyzed the perceived importance of nutrition and health labeling. Nutrition and health claims on food products are rated as a moderately important product attribute. More than 35% of the respondents say that NHCs on products are important for them, more than 45% express indifference to NHCs, while only 19% say that those claims are not important. There is a great number of respondents that do not have a positive attitude toward NHCs, which can be explained by two factors: (1) a high level of skepticism connected to food labels, already identified in the previous studies (Mitić, Gligorijević, 2012), (2) a low level of awareness and knowledge about those products. Our data confirmed that skepticism toward food labels influences attitudes toward the importance of NHCs.[5] We found statistically significant differences between consumers that express different attitudes toward NH claims based on their attitudes toward truthfulness of food labels in general (F=5.783; p=0.000). A higher level of confidence in the truthfulness of food labels influence a higher-perceived importance of NHCs on food products. Also, there is the statistical confirmation of a positive relationship between the level of knowledge and attitudes toward NHCs. A higher percentage of the respondents who expressed a lower level of nutrition knowledge rated NHCs as not important or proclaimed themselves as indifferent (F=9.526, p=0.000), while in the group of the respondents who evaluated NHCs as very important majority of them (47.2%) are those with the highest nutrition knowledge (comparing with 26.8% of consumers with the same level of nutrition knowledge who evaluated the importance of NHCs as not important at all).

In this segment of perceived importance of NHCs, we found statistically significant differences between the respondents based on gender (41.4% of female respondents highly rate importance of NHCs, compared with 28.3% of male respondents; t=-3.976, p=0.000) and education (a larger percent of respondents with higher education valued the importance of NHCs on food products; F=2.490, p=0.042). There are no statistically significant differences regarding other socio-demographic factors, nor health related issues.

Attitudes toward products with nutrition and health claims

Consumers' attitudes toward products with NHCs were measured by five seven-point semantic differential scales with the following items: bad/good, unpleasant/pleasant, unhealthy/healthy, inconvenient for consumption/convenient for consumption, tasteless/tasty and inexpensive/expensive. The results are in table 4. Attitudes toward products with nutrition and health claims are generally positive, with mean values above average. Statements that those products are good, healthy and expensive get the highest average marks, while statements that products are tasty get the lowest average mark. The taste of

---

5   In the second part of the questionnaire, among other attitudes toward food labels, we examined attitudes toward their truthfulness.

these products can be seen as a potential obstacle for the increase in consumption, which will be examined in more detail in the next section. All in all, respondents have positive attitudes in all segments, which can be encouraging for producers, and which implies that there is a good potential for further development of Serbian market for products with NHCs.

Table 4. Attitudes toward products with NHCs

In my opinion products with NHCs are:	Min.	Max.	Mean	Std. Deviation
bad/good	-3	3	1.74	1.318
unpleasant/ pleasant	-3	3	1.35	1.385
unhealthy/ healthy	-3	3	1.96	1.267
inconvenient for consumption/ convenient for consumption	-3	3	1.30	1.403
tasteless/ tasty	-3	3	1.09	1.528
inexpensive/ expensive	-3	3	1.55	1.355

Source: Authors' calculation according to data from Mitić, Gligorijević, 2013.

Women have more positive attitudes (all six) than men (with statistically significant differences in the first three statements; statement 1: t= -2.267, p= 0.024, statement 2: t= -2.043, p=0.040; statement 3: t= -1.889, p=0.059). With regard to education, age and income level, the only significant difference exists in the final statement. Respondents with lower income, lower level of education, and the oldest ones perceived those products as more expensive. Their socio-economic status has a high influence on the differences in the perception of the prices of those products. The most important variable can be the level of income, which is connected to the low level of education, due to small salaries of professions that do not require high education, and with the age of the respondents due to the fact that senior citizens are a socially vulnerable part of the population in Serbia.

Examining the differences in attitudes of the respondents based on their health status, we found more favorable attitudes toward products with NHCs among the respondents with better health (statistical significance for the first four statements, statement 1: F=7.265, p=0.000; statement 2: F=4.924, p=0.001; statement 3: F=3.879, p=0.004; statement 4: F=2.755, p=0.027). The differentiation of the consumers based on their chronic health problems gave the same results. Respondents without chronic illness have more positive attitudes (first four statements) toward products with NHCs (with statistically significant differences in: statement 1: t=-3.124, p=0.002; statement 2: t=-1.867, p=0.062; statement 4: t=-2.022, p=0.044).

The consumption of products with nutrition and health claims

Consumption of products with NHCs is tracked through three aspects: (1) attitudes toward the importance of consumption, (2) actual consumption of products and (3) intention to consume the products.

To some extent, we found a higher percent of the respondents that think that the consumption of products with NHC is important (41.4%), in comparison with the attitude toward the importance of nutrition and health labeling of products, while 47% of the respondents are indifferent. There are no statistically significant differences between the respondents

connected with their health conditions, economic status, age and gender. We only found differences between the respondents based on their education (F=2.160, p=0.072, respondents with higher education have more favorable attitudes toward the importance of consumption of products with NHCs).

Regarding the consumption of products, we examined the frequencies of consumption. 56.1% of the respondents use this product at least once a week or more frequently. There is an evident gap between actual and intended consumption, as more than 77% of the respondents would use those products as frequently as they mentioned if they became more available. Availability of products with NHCs can be understood in the sense of prices and presence of products in distribution channels. The results of a study which tracked the presence of products with NHCs in retail stores in Serbia showed that those products are widely present in different retail formats and in many product categories (dairy, juices, sweets, bread and cereals, food for diabetics, etc.). Therefore, the mentioned gap can be the consequence of higher prices of products with NHCs, but also of the fact that consumers are not used to reading labels (15.2% of the respondents regularly read labels on food products). Because of the absence of the habit to read labels, we can assume that consumers are not fully aware of the offer of the products with NHCs, and that can be highlighted as a significant difficulty for further increase in consumption. There are statistically significant differences based on demographic characteristics concerning actual consumption and intended consumption (table 5). Respondents with higher level of education, female respondents, respondents from households with higher economic standard and younger than 30 more frequently consume products with NHCs, and expressed to a larger extent the intention to use those product regularly (once a day and more) if they became more available.

It is possible to compare the differences between real consumption and intended consumption in the case of better availability of products. Although intended consumption is on a higher level than the actual one, in some cases those differences are very high. As expected, the respondents who are sensitive to price expressed higher willingness to regularly consume products with NHCs compared with their actual consumption. Those are the respondents from households with lower economic standards.

Table 5. Actual and intended consumption of products with NHCs

Respondents' characteristics	Actual consumption of products	Intention to consume the products
Gender	t=2.979; p=0.003	t=4.321; p=0.000
Education	F=10.813; p=0.000	F=3.639; p=0.006
Economic standard of households	F=7.929; p=0.000	-
Age	F=25.644; p=0.000	F=13.350; p=0.000
Vulnerable group/others	t=5.150; p=0.000	t=4.249; p=0.000
Overall health status	F=11.919; p=0.000	F=8.562; p=0.000

Source: Authors' calculation according to data from Mitić, Gligorijević, 2013.

We also found significant differences between the respondents regarding their health status. As motioned before, we tracked health status of the respondents through two dimensions:

1. Overall health status:

- the respondents who evaluated their overall health as excellent more frequently use products with NHCs, compared to other respondents;

- in every group, more respondents expressed intention to buy products with NHCs if they became more available, compared to the number of respondents who already buy this products; the highest differences are in the groups of respondents with good and excellent health (22% of the respondents with excellent health and 14.6% with good health) consume products with NHCs once a day and more, and 51% (45.9% with good health) would consume those products with the same frequencies if they became more available); in the case of the respondents with bad and very bad health they do not show such a high intention to consume products once a day and more.

2. Chronic health problems of the respondents:

- in the case of the vulnerable group of the respondents, in this segment we also got unexpected results, but in accordance with the results in previous sections; the vulnerable group do not consume products with NHCs as often as the respondents who do not have chronic health problems (statistically significant difference, 11.2% of the respondents in the vulnerable group consume the product once a day and more, comparing with 18.3% of the respondents in the non-vulnerable group);

- regarding the intention to consume products with NHCs, the results are in accordance with the previous - more respondents without health problems would consume those products more frequently if they became more available to them (47.8%), comparing with the respondents in the vulnerable group (36.3%); Looking at the initial level of consumption in both groups there is an increase in the intentions to consume the products, again with the highest increase in the group of respondents without health problems.

Further analysis will address the question of the main barriers that potentially inhibit the consumption of NHCs products. It seems that prices can be an important factor that influences buying behavior, which can be concerning given a potentially positive influence of the products with NHCs on health, especially in the case of the people with health issues. Apart from the prices, as potential obstacle for a higher consumption of the products with NHCs, we have already mentioned the absence of consumers' habit to read labels. The second issue that can explain the lower level of interest of the vulnerable group of the respondents is connected with their knowledge about the influences of the nutritional characteristics of food on health and their ability to understand the information presented on labels.

Firstly, we will address the issue of the prices of food products as the determinants of consumers' behavior. Based on *Food Choice Questionnaire* (Steptoe et al., 1995), which is a part of the survey, we can evaluate the importance of price as a determinant of food choice and as a potential barrier for the consumption of the products with NHCs. The 36 items from the original FCQ were evaluated on a 5-item Likert scale. A principal component analysis with varimax rotation was performed. Nine factors were considered significant. They account for 57.12% of the variance (Table 6).

Table 6. Principal component analysis

Component	Rotation Sums of Squared Loadings			Average factor score
	Total	% variance explained	Cumulative %	
Health and nutrition value of food	4.034	11.207	11.207	4.03
Mood	3.106	8.627	19.834	3.56
Weight control	2.375	6.598	26.431	3.46
Convenience of preparation	2.357	6.546	32.978	3.79
Sensory appeal	2.221	6.168	39.146	4.39
Price	1.718	4.773	43.919	3.74
Ethical concern	1.636	4.546	48.464	2.77
Availability in shops	1.567	4.352	52.816	4.30
Familiarity	1.549	4.303	57.119	3.70
Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.875 Bartlett's Test of Sphericity; Approx. Chi-Square = 9930.346; df=630; significance 0.000				

Source: Authors' calculation according to data from Mitić, Gligorijević, 2013.

Based on the individual item scores, we found that the sensory appeal (4.39, on the five-point scale) (especially the taste of the food) is most important for food choice, next are the availability of food in retailing (4.30) and health/nutrition value of food (4.03). Consumers did not evaluate the price (items within this factor) as the most important factor of food choice, but it comes on the fifth place within nine factors, with an average mark 3.79. A deeper analysis shows that the vulnerable group of the respondents gives more importance to the items within the factor of prices, than the respondents without chronic health problems (statistically significant difference, Table 7). The same variation we found among the respondents with different overall health status.

This result confirms the previous statement that the behavior of the vulnerable group of the respondents can be explained by socio-demographic factors, especially by the level of income and education. This is why they value the prices of the products more comparing to the other groups, so the prices can be one explanation for their relatively low consumption of the products with NHCs.

Table 7. The importance of prices regarding the health of the respondents

Group of respondents	Item 6		Item 36	
	"It is important to me that the food I eat on a typical day..."			
	is not expensive		is cheap	
	Average mark	t test	Average mark	t test
Respondents with chronic health problems	3.99	t=2.253	3.87	t=3.047
Respondents without chronic health problems	3.8	p=0.025	3.60	p=0.002

Source: Authors' calculation according to data from Mitić, Gligorijević, 2013.

But, one question for discussion still remains- Why the vulnerable group did not express a higher level of intention to increase consumption, if those products became more available to them? Nutrition knowledge is the second potential barrier for consumers' consumption of products with NHCs. The level of knowledge differs significantly in different groups of respondents, regarding their actual and intended consumption of products with NHCs, awareness of those products, perceived importance of consumption and the presence of nutrition and health claims on the products.

Respondents that demonstrated a higher level of knowledge are those who (1) are better informed about those products (F=4.698, p=0.009), as we pointed out that awareness is the prerequisite for knowledge, (2) assessed importance of NHCs on the product at a higher level (F=9.526, p=0.000), (3) perceived the consumption of products with NHCs as more important (F=9.671, p=0.000), (4) used products with NHCs more often(F=4.309, p=0.014), (5) expressed higher intended consumption (F=2.675, p=0.069).

The results indicate that nutrition knowledge influences the perception of the importance of nutrition and health labeling, but also the consumption of those products. Consumers that know more about the characteristics of some nutrients, their natural sources and impact on health more regularly use products with NHCs. As the nutrition knowledge of vulnerable groups is not on a high level, that can partially explain their low actual consumption as well as the low level of intended consumption.

Discussion and implications

With the aim to explore various determinants of consumer food choice behavior, this quantitative study offers an additional insight into the characteristics of Serbian demand for products with nutrition and health labels. Examining consumers' awareness, attitudes, knowledge and consumption we found significant differences based on socio-demographic characteristics of the respondents. As in some previous studies, we found positive relations between awareness, attitudes and consumption, on one side, and the level of education and the level of income, on the other. Also, women have more positive attitudes toward products with NHCs than men.

Apart from socio-demographic characteristics, we introduced additional variables that describe the health status of the respondents. Respondents with chronic health problems (the vulnerable group), and overall worse health status, showed a lower level of awareness and consumption of the products with NHCs. Those results represent an important finding, significant for producers, but also for government institutions and health organizations. As nutrition is an important part of medical treatment of chronic health problems, those results reveal the necessity to provide additional instructions and information to the vulnerable group. From the perspective of producers, we can recommend highlighting potential positive effect of their products' nutrients on health through advertising and other promotion tools, in order to build better awareness and improve nutrition knowledge of consumers. The role of the government, professional organizations, educational, public and medical institutions in improving the nutrition knowledge of consumers in Serbia, either through a national government campaign or specialized educational programs developed by educational or medical institutions is essential.

A low level of nutrition knowledge is a general characteristic of Serbian consumers, but the lowest level of knowledge is in the group of the respondents with some health problems. This can be the most important reason for the low level of awareness and consumption of products with NHCs, but also of a lower intention to consume them (if they become more available to them). In order to examine food choice behavior characteristics of the vulnerable group of the respondents in more detail, we identified their food buying motives as well as their attitudes toward food labels as potential barriers for the increase in consumption. Basic food motives appear to be sensory appeals, especially the taste of food, which is in accordance with the results of the majority of studies in this field. Regarding other food choice motives, the vulnerable group value prices of food as more important than the group of the respondents without health problems. Food motives can be one of the restraining factors for the rise in consumption, having in mind that products with NHCs have a different taste from the regular products (especially in the case of products with the reduced level of fat, sugar or salt) and that lower economic status of the vulnerable group influences their higher price sensitivity. When it comes to food label usage, consumers in Serbia, in general, do not read labels regularly, which can be an obstacle for a better market positioning of producers, as well as for the increase in consumption, especially by the vulnerable group. The absence of the habit to read labels and a high level of skepticism of Serbian consumers, identified in some previous studies, can be the result of the low level of knowledge, but also of the absence of comprehensive regulation in the segment of nutrition and health claims. An extensive usage of those claims, particularly of the general and misleading claims, can develop the intolerance effect. The improvement of Serbian legislation, and further harmonization with the EU regulations, will certainly have a positive impact on consumers' attitudes and confidence in food labeling and health claims on food products.

Based on the whole sample, we found that knowledge and socio-demographic characteristics of consumers are important variables of food choice in the segment of products with nutrition and health claims. These characteristics of the consumers make a distinction between users and non-users of those products, with evident differences in attitudes, awareness, consumption,

perceived importance of nutrition and health labeling, and in other analyzed segments. The increase in knowledge, especially in the case of the vulnerable groups, as well as in education and income, could have a positive impact on the consumption of the products with nutrition and health claims.

Literature

1. Baltas, G. (2001):*The effects of nutrition information on consumer choice,* Journal of Advertising Research, vol. 35, no. 5/6, pp. 57-63.

2. Bornkessel, S., Bröring, S.,Omta, S.W.F., van Trijp, H. (2014): *What determines ingredient awareness of consumers? A study on ten functional food ingredients,* Food Quality and Preference, no. 32, pp. 330–339.

3. Chan, C., Patch, C., Williams, P. (2005): *Australian consumers are sceptical about but influenced by claims about fat on food labels*, European Journal of Clinical Nutrition, vol. 59, pp. 148–151.

4. Ford, G., Hastak, M., Mitra, A., Ringold, D. (1996): *Can Consumers Interpret Nutrition Information in the Presence of a Health Claim? A Laboratory Investigation*, Journal of Public Policy & Marketing, vol. 15, no. 1, pp. 16-27.

5. Gagić, S., Jovičić, A., Tešanović, D., Kalenjuk, B. (2014): *Motives for food choice among Serbian consumers,* Economics of Agriculture, vol. 61, no. 1, pp. 41-51.

6. *Health claims*, EU Commission, Brussels, Belgium, available at: http://ec.europa.eu/food/food/labellingnutrition/claims/ health_claims_en.htm

7. *Health and nutrition claims,* European Commission, Brussels, Belgium, available at: http://ec.europa.eu/food/food/labellingnutrition/claims/index_en.htm

8. Kozup, J., Creyer, E., Burton, S. (2003): *Making Healthful Food Choices: The Influence of Health Claims and Nutrition Information on Consumers' Evaluations of Packaged Food Products and Restaurant Menu Items*, Journal of Marketing, no. 67, pp. 19-34.

9. Lalor, F., Kennedy, J., Flynn, M., Wall, P. (2010): *A study of nutrition and health claims – a snapshot of what's on the Irish market,* Public Health Nutrition, vol. 13, no. 5, pp. 704–711.

10. Milošević, J., Žeželj, I., Gortonc, M.,Barjolle, D. (2012): *Understanding the motives for food choice in Western Balkan Countries,* Appetite, vol. 58, no. 1, pp. 205–214.

11. Mitić, S., Gligorijević, M. (2012): *Consumers' attitudes towards nutrition labeling and health claims on food products in Serbia,* 3rdEMAC CEE Regional Conference, September 12-14, Belgrade, Faculty of Economics, University of Belgrade, pp. 83-89.

12. Mitić, S., Gligorijević, M., Zečević, A. (2013): *Istraživanje ponude prehrambenih proizvoda sa zdravstvenim i nutritivnim izjavama,* Ekonomska politika i razvoj (Eds: Jovanović Gavrilović, B., Rakonjac Antić, T., Stojanović, Ž., Filipović, M., Ekonomski fakultet, Univerzitet u Beogradu, Beograd, pp. 55-79.

13. Mitić, S., Gligorijević, M. (2013): *Project no. III 41030 - Biological mechanism, nutrition intake and status of polyunsaturated fatty acids and folates: section 5 - Nutrition and consumers*, survey research, internal documentation (questionnaires), Faculty of Economics, Belgrade University.

14. Næs, T., Kubberød, E., Sivertsen, H. (2001): *Identifying and interpreting market segments using conjoint analysis,* Food Quality and Preference, no. 12, pp. 133–143.

15. Niva, M. (2006): *Can we predict who adopts health-promoting foods? Users of functional foods in Finland,* Scandinavian Journal of Food and Nutrition, no. 50, pp. 13–24.

16. Niva, M.,Mäkelä, J. (2005): *Finns and functional foods: socio-demographics, health efforts, notions of technology and the acceptability of health-promoting foods,* International Journal of Consumer Studies, vol. 31, no. 1, pp. 34-45.

17. *Regulation (EC) No 1924/2006 of the European parliament and of the Council,* 20 December 2006, Bruxelles, Belgium, available at: http://eur-lex.europa.eu/legal-content/en/txt/pdf/?uri=celex:3200 6r1924&from=en

18. Roos, E. (1998): *Gender, socioeconomic status and family status as determinants of food behavior,* Social Science and Medicine, vo. 46, pp. 1519–1529.

19. Sanlier, N., Karakus, S. (2010): *Evaluation of food purchasing behaviour of consumers from supermarkets,* British Food Journal, no. 112, pp. 140-150.

20. Shimizu, T. (2003): *Health Claims and Scientific Substantiation of Functional Foods - Japanese System Aiming the Global Standard,* Current topics in Nutraceutical Research, vol. 1, no. 2, pp. 1-12.

21. Shine, A., O'Reilly, S., O'Sullivan, K. (1997): *Consumer use of nutrition labels,* British Food Journal, vol. 99, no. 8, pp. 290-296.

22. Steptoe, A., Pollard, T., Wardle, J. (1995): *Development of a measure of the motives underlying the selection of food: The food choice questionnaire,* Appetite, no. 25, pp. 267-284.

23. Stojanović, Ž., Dragutinović Mitrović, R. (2012): *The Serbian Functional Food Market: Does Regulation Make a Difference?,* Economic Annals, vo. 57, no. 193, pp. 53-69.

24. Stojanović, Ž., Ognjanov, G.,Dragutinović Mitrović, R. (2010): *Nutritional & Health Claimed Products Market Development in Serbia: Exploration of Findings Obtained from In Depth Interviews,* 1st Joint EAAE/AAEA Seminar, The Economics of Food, Food Choice and Health, September 15–17, Freising, Germany.

25. Žeželj, I., Milošević, J., Stojanović, Ž., Ognjanov, G. (2012): *The motivational and informational basis of attitudes toward foods with health claims*, Appetite, vol. 59, no. 3, pp. 960-967.

STAVOVI, ZNANJE POTROŠAČA I POTROŠNJA PROIZVODA SA NUTRITIVNIM I ZDRAVSTVENIM IZJAVAMA

Sanja Mitić[6], Mirjana Gligorijević[7]

Rezime

U ovom radu su predstavljeni rezultati istraživanja ponašanja potrošača u Srbiji u segmentu hrane. U radu je fokus na proizvodima sa nutritivnim i zdravstvenim izjavama (NZI) i na analizi ključnih karakteristika potrošača koje utiču na svest o ovim proizvodima, nutritivno znanje, stavovima i kupovnim namerama. Analizirani su različiti socio-demografski faktori koji utiču na ponašanje potrošača. Ključni faktori koji utiču na svest, znanje i potrošnju su: obrazovanje, pol, starost i dohodak. Kako su proizvodi sa NIZ povezani sa zdravljem potrošača, u radu su istražene i razlike u ponašanju sa aspekta zdravstvenog stanja ispitanika. Rezultati pokazuju da ispitanici sa zdravstenim problemima ređe koriste ove proizvode u odnosu na druge ispitanike, što je posledica lošijeg nutritivnog znanja. Ovo je ključna prepreka za povećanje potrošnje. Na kraju će biti date preporuke za mendžere, u cilju prevazilaženja identifikovanih prepreka, kao i za državne institucije, kako bi bilo moguće unaprediti opšte zdravlje populacije.

Ključne reči: *zdravstvene izjave, nutritivne izjave, oznake na hrani, nutritivno znanje, ponašanje potrošača**.***

6   Doc. dr Sanja Mitić, Ekonomski fakultet, Univerzitet u Beogradu, Kamenička 6, Beograd,Srbija, Telefon: +381113021175, E-mail: sanja@ekof.bg.ac.rs

7   Prof. dr Mirjana Gligorijević, redovan profesor, Ekonomski fakultet, Univerzitet u Beogradu, Kamenička 6, Beograd, Srbija, Telefon: +381113021019, Email: miragli@sezampro.rs

HRM IN FOREIGN-OWNED AGRICULTURAL AND FOOD PROCESSING COMPANIES IN SERBIA

Tatjana Ratković[1]

Summary

This paper was aimed at analysing the degree to which foreign-owned agricultural and food processing companies in Serbia implement key human resource management (HRM) processes, determining whether these processes are performed in-house or outsourced, and identifying the variables which influence the decision on performing these processes within the company or outsourcing. The analysis of data collected through a survey conducted in 42 companies has confirmed the expectations that the surveyed companies mainly perform most of HRM activities The conclusion drawn from the study is that all examined HRM activities are mainly performed in-house, rather than outsourced, while the mode of performing key HRM processes mainly depends on the size of the company and the number of employees in HR department, implying that foreign-owned companies operating in agricultural and food processing sector in this transition country need to take these variables into consideration when deciding whether to perform crucial HRM activities by themselves or outsource.

Key words: *human resource management, agriculture, food processing, recruitment, performance appraisal.*

JEL: *M510, Q13, L660*

Introduction

Traditionally the role of HRM function has been weak in Serbian companies. It was usually focused on administrative issues, and often performed by a legal department. Multinational companies entered Serbian market relatively late, having in mind that this country has been cut off from other countries during the last decades. Having in mind that modern human resource management functions were brought to this country by multinational companies, it is not surprising that first modern HR departments were founded recently- since 2004/2005 (Cromer, 2008). HRM in Serbia has gone through significant changes during the last decade. Acquisition of local companies by overseas investors (especially multinational companies), restructuring of companies, introduction of contemporary technologies have

---

1   Tatjana Ratković, Ph.D., Teaching Assistant, Faculty of Organizational Sciences, University of Belgrade, Jove Ilica Street no. 154, 11000 Belgrade, Serbia, Phone: +381 11 39 50 898, E-mail: tatjana.ratkovic@fon.bg.ac.rs

all contributed to the development of HRM function in Serbian companies (Svetlik et al., 2010). This enabled Serbia to accomplish technology transfer that would help modernize its backward industry. The traditional concept of personnel management slowly started to move towards modern HRM concept applied in modern companies originating from developed countries. The companies slowly began to change the name, role and activities of "personnel management" to "human resource management" department. The aim of this research was to explore the HRM function in agricultural and food processing sector. According to Mihailović and associates (2013) agriculture in Serbia is limited by certain determinants- it adapts slowly to market business criteria which are based on introduction and implementation of modern management systems. The same may be claimed for food processing industry, which also lacks contemporary management systems, especially in terms of HRM.

Agricultural and food processing sector in Serbia

Agriculture and food processing represent one of the most significant economic sectors in Serbia. Having in mind available natural and human resources invested in this sector, it extensively contributes both to social and economic development of the country. It is one of dominating economic sectors due to the number of employees it provides employment for. Serbian agricultural and food industry, encompassing agricultural production and food and beverage processing, employs 557,000 people and accounts for around 16,6% of national gross domestic product (GDP). However, if total contribution of agro-food industry to other economic sectors (particularly producers and processors of inputs and raw materials) is considered- this share accounts for more than 40% of total GDP. Convenient geographical position of the country, its climate, as well as high-quality soil contributes to positive results achieved in this sector (Vapa Tankosic, Stojsavljevic, 2012).

Over the past few years employment in agriculture has been falling down. However, it has still remained high. In 2013, approximately 21.3% of Serbian workforce (429,000 people) was employed in agriculture, which is among the highest percentages in European countries. A possible explanation for this may be a high percentage of seasonal and temporary workers employed in this sector.

There have been insufficient investments in agricultural sector in Serbia, which is one of the main reasons for lack of modernization of equipment and machines in agricultural companies. Even though there are three types of operations that may be found in this sector- including large agricultural companies, small family farming and commercial family farming (Bugar, Papic Blagojevic, 2009), the agricultural sector in Serbia is still mostly comprised of family/owner-operated and small businesses. Compared to other economic sectors, agriculture has a high percentage of unqualified workforce (Berde, 2006), with relatively low level of motivation among agricultural employees (primarily due to unattractive compensation packages).

Food processing represents the largest developmental opportunity for Serbia due to high natural potential, low labour costs and available land and water resources (Grozdanić, 2013). Food industry in Serbia represents more than 30% of total processing industry in the country.

It is one of few economic sectors with positive foreign trade balance. Food industry currently employs approximately 65,000 employees, or 4.1% of total workforce in Serbia, which represents 20% of total number of employees in processing industry. During the last years, employment has been slightly increasing in this sector.

There are more than 4,500 businesses (SMEs and large companies) in the food processing industry operating in Serbia. These companies are predominantly small ones, 75% of food processing companies employ less than ten employees. There is a limited number of large, modern companies, which employ more than 250 employees (many of them represent subsidiaries of multinational companies); they are mainly found in grain processing, sugar industry, beverage (i.e. beer) industry.

There were many foreign direct investments in food processing industry during the last decade. This sector has passed through a huge privatization- more than 90% of companies operating in this sector are now owned by foreign companies. The total amount of foreign investments in agricultural and food processing sector since 2000 exceeded USD 1 billion. Foreign companies entered Serbian market mainly through acquisition and Greenfield investments, particularly in beverage, sugar, milk, meat industry (Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia, 2014). Privatized companies brought capital, managerial skills, technical and technological innovations, they renovated and modernized plants and machines, which resulted in high-quality modern equipment and highly educated employees in most foreign-owned food processing companies. Most investments have been put in oil, beer, milk and confectionary industry; on the other hand sugar, meat, fruit and vegetables industry are characterized by less investments and technological modernization (Mihailović et al., 2013).

Significance of HRM in agriculture and food processing sector

Human resource management plays an important role in agriculture and food processing sector and represents one of the most complex issues in agro-food companies, being influenced more by social than economic determinants (Siva Rama Krishna et al., 1995). The expansion of agricultural and food processing industry has been viewed as one of the most significant sources of economic growth in agro-food sector in developing countries, while the most significant contribution to the success of every agro-food organization has been the productivity of its employees. Today it is commonly accepted that HRM has a significant influence on overall success of agricultural (Contò et al., 2012) and food processing companies.

The overall objective of every successful organization is to achieve sustained competitive advantage in a long-term. According to resource-based view, human resources may be a source of competitive advantage of a company, as companies may create economic value through utilization of their employees (Barney, 1991), only if their knowledge, skills and abilities can be used appropriately (Brewster et al., 2007). Beside other resources, human resources are often seen as a crucial strategic resource used by companies to achieve this objective, especially in agricultural and food processing sector (Mugera, 2012; Wilk,

Fensterseifer, 2003). Having in mind that their people are their most valuable asset, agro-food companies and their managers need to search for the best ways to manage their employees effectively with an objective to achieve and maintain the desired market position (Mugera, 2010).

The role of human resource management in agro-food sector- where production, processing, and timely delivery of high-quality products depend on skills, knowledge and abilities of their employees- are of crucial importance. It is primarily aimed at recruiting, managing and maintaining the staff composed of highly specialized experts, semi-skilled workers and unskilled workers.

However, there is a lack of research regarding HRM in this sector as literature has paid insufficient attention to this topic (Bitsch, 2009). Research in HRM is usually focused on other sectors rather than agriculture and food processing. Additionally, it may happen that certain HRM practices developed for large companies cannot always be successfully implemented in smaller companies; also, practices defined for companies from other sectors may not work well in agricultural and food sector (Bitsch, 2009; Venclová et al., 2013). Having this in mind agricultural (as well as food processing) managers often have little evidence to rely on when developing HRM policies and procedures for their companies. This makes HRM processes in these companies much more complex, as managers need to develop specific systems for managing the workers efficiently and effectively. This explains the importance of HRM role in agro-food organizations (particularly multinational ones, which face much more complex issues in managing their employees).

Having in mind that main challenges faced by agro-food companies include attracting, motivating, and retaining qualified employees (Mugera, 2010), their HR departments should deal with different activities in order to satisfy and synchronize both individual and organizational goals. It should be ensured that each employee strives to achieve his/her goals which have derived from organizational objectives.

Since modern HRM concept was brought to Serbia relatively recently, and most often by foreign-owned companies, it was assumed in this research that mainly the subsidiaries of these companies in Serbia have implemented modern HR processes, rather than local companies. This is the reason why this survey focused only on foreign-owned companies in agricultural and food processing sector in Serbia (with many of them being subsidiaries of foreign multinational companies) in order to examine the following hypothesis:

Hypothesis 1: Foreign-owned agricultural and food processing companies in Serbia perform key HRM activities.

The following HRM activities were examined in this paper. Human resource planning refers to a process aimed at analysing and predicting organizational needs for human resources and their availability. Since success of companies involved in agricultural and food processing industry greatly depends on skills and experience of their human resources specialists, the objective of this process is to identify the number and the types of employees needed by an organization in the future to fill in its vacancies, as well as

changes the organization should undertake in order to accomplish its goals – in terms of reducing the number of employees, training existing employees or hiring new personnel. In order to achieve expansion in agro-food organizations, HR departments need to perform appropriate personnel planning in all departments. HR department should work together with line managers in order to predict future organizational HR needs (both short-term and long-term) and determine the number and qualifications of specialized workers the organization will require depending on identified needs. It is the duty of HR department to ensure that these requirements are met in order to support crucial agricultural or food processing processes in the company.

When specific HR plans (short-term and long-term) have been made a company may start with recruitment- the process in which organization looks for candidates for potential employment. Therefore, this process refers to identification and attracting potential job candidates in order to satisfy current and future organizational HR needs. The aim is to obtain the necessary number and quality of employees in order to accomplish organizational HR needs. A key challenge agricultural and food processing companies must face in attempt to become and remain competitive refers to deciding on the ways of attracting and retaining skilled workforce (Morgan et al., 2004). Companies in agro-food sector employ different types of workers- mainly seasonal and contract workers (including harvest labour), technicians, but also supervisors and managers and thus require a wide dispersion of skills levels- from unskilled and low-skilled to high-skilled jobs. For example, Noel and Qenani (2013) found that skills such as creativity and critical thinking today become more important in agricultural sector. Having this in mind, skills and labour shortages may be a serious issue in this sector causing difficulties in recruiting adequate candidates. Besides, one of main problems faced by agricultural companies (both globally and in Serbia) refers to ageing workforce within agriculture as well as their education level (Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia, 2014). Another challenge which may be faced refers to too many job candidates in agricultural sector, having in mind that the only option for most inhabitants in rural areas is to work in this sector (Siva Rama Krishna et al., 1995). Having in mind the specific nature of the business as well as knowledge, skills and abilities required, HR department should cooperate with department managers in the process of recruitment of agricultural and food processing employees.

Selection is often considered one of the most important HR processes in agro-food companies. It refers to the process in which an organization attempts to choose (among potential candidates identified in the previous phase) the ones who possess knowledge, skills, abilities and other characteristics required for accomplishment of organizational goals. Having in mind high cost of potential selection error, a lot of attention has to be paid to performing this process appropriately. So, companies should work hard to determine specific selection methods, techniques and procedures to ensure that the right person is selected for each vacancy as well as to ensure that particular agro-food business is fully staffed at all times with the most qualified people.

As integral part of the process of human resources performance management, employee performance appraisal is one of the most important human resource management tools (Dessler, 2011). It refers to a process which enables a company to evaluate performance of its employees within a particular period of time based on previously clearly defined goals and targets. This process should ensure that each employee understands better his/her role in the organizations as well as his/her tasks, individual strengths and weaknesses related to his/her expected roles and functions in the company and it should increase and improve communication between an employee and HR department and managers.

Companies provide training programs for their employees to enable them to gain specific knowledge and skills necessary for performing their jobs effectively. HR department should pay significant attention to these issues. Whenever it is noticed that an employee lacks specific skills or knowledge training programs should be arranged – within the company or in other organizations, universities or institutes; employees may be sent to different seminars, conferences or workshops in order to gain necessary knowledge and become familiar with the best practices which they may later implement properly in the organization. In agriculture and food processing companies training represents one of the most significant responsibilities at all organizational levels. Employees (especially low-skilled workers) need to be trained to use agricultural machines or perform risky processes in food production or processing, particularly when a new technology has been introduced (Baptista, 2012). Safety trainings represent a priority for human resource management, in order to eliminate or reduce the possibility for injuries in the workplace or even death caused by inadequate handling with equipment and machines, or work-related illnesses.

HRM activities may be performed within the company or outsourced. There are many reasons for outsourcing these activities: it may be too complex for companies to deal with all HRM activities themselves; companies may reduce costs of HRM (of employing highly trained and experienced HR employees as well as necessary office space); they may improve the quality of HRM processes (services provided by HR agencies are professional as they are specialized only for particular HRM processes). Outsourcing may be a good solution for companies which don't have enough experience in HRM (e.g. when entering a new market). However, from a long-term perspective companies often prefer to establish their own HRM departments, rather than engage HR agencies for performing their crucial HRM activities.

The literature has identified various factors which are expected to have an influence on the decision to perform HRM processes within the company or outsource. Thus the following hypotheses were defined and later examined for five different HRM activates: HR planning, recruitment, selection, and training as well as performance appraisal of employees.

Hypothesis 2: The decision on performing key HRM activities themselves or outsourcing them depends on country of origin of the company.

Hypothesis 3: The decision on performing key HRM activities themselves or outsourcing them depends on company size.

Hypothesis 4: The decision on performing key HRM activities themselves or outsourcing

them depends on company age.

Hypothesis 5: The decision on performing key HRM activities themselves or outsourcing them depends on the size of HR department.

Methodology

Data for the empirical research were derived from a questionnaire survey; the questionnaire was distributed to either HR manager or General Manager of each company. In general, literature lacks research dealing with HRM in agriculture and food processing industry. Another limitation of this study was a relatively low number of foreign-owned companies operating in agricultural and food-processing sector in Serbia. Having this in mind, companies for the research were selected regardless of their mode of founding, ownership type, size or age.

The questionnaire was developed after comprehensive review of relevant literature referring to HRM in agricultural and food processing sector. The questions were focused on different HRM activities performed in foreign-owned companies in Serbia. The aim of the research was: to discover the extent to which foreign-owned agricultural and food processing companies in Serbia implement key HRM activities and whether these activities are performed by themselves or outsourced, and to identify the variables which influence the decision on performing HRM activities within the company or outsourcing. In order to examine various aspects of HRM function in surveyed companies the research focused on the following HRM activities: planning, recruitment, selection, training, and performance appraisal. Independent variables examined within the study included the following: nationality (country of origin of the foreign-owned company), subsidiary size and age, as well as existence of HR department (number of employees in this department).

Sample

Total number of foreign-owned agricultural and food processing companies included in the research was 42. However, unlike food processing companies, agricultural sector in this country predominantly includes small (mainly local) companies and small family-owned farms, and employs a high percentage of unqualified workforces (compared to other economic sectors). Thus, companies covered by this research are mainly involved in food processing rather than agriculture: the majority of respondent companies (30 out of 42) in Serbia operate in the food processing sector, while only 12 companies are involved in agriculture. Almost half (45.2%) of surveyed companies are involved in production of beverages (16.7%), confectionary and snacks (14.3%) and milk and dairy products (14.3%). Other companies mainly produce agrochemicals and/or seeds, animal feed, as well as fruit and vegetables, sugar, products of grain processing (flour, cereals), meat, vegetable oil, frozen food products.

Foreign-owned agricultural and food processing companies in Serbia originate from 16 different countries. They primarily come from the USA (16.7%), Netherlands (16.7%) and France (11.9%), while almost 80% of them have their headquarters in European countries.

Majority (88%) of respondent agricultural and food processing companies in Serbia were founded in the last 15 years (26.2% during the last 5 years, 31% 6-10 years ago, 31% 11-15 years ago), while only 11.9% of them exist in Serbia for more than 15 years.

Based on analysis of data it may be noticed that small foreign-owned agricultural and food processing organizations (with up to 50 employees) represent 23.8% of the sample, medium-sized companies (between 51 and 249 employees) account for 33.3%, while large organizations (more than 250 employees) represent the majority of the sample- 42.9%. The majority of large companies have more than 500 employees (66.7%). The relatively high percentage of large companies in the sample may be explained by the fact that all surveyed companies are foreign-owned, and mainly represent subsidiaries of large foreign multinational companies (unlike local agricultural and food processing companies in Serbia which are mainly small).

The majority (77.8%) of large companies surveyed was founded more than 5 and less than 15 years ago, while only 2 (out of 18) companies were founded during the last 5 years. Large foreign-owned agro-food companies in Serbia mainly operate in beverage industry (6 companies out of 18, i.e. 33.3% of all large companies), confectionary and snacks (22.2%) and milk and dairy products (16.7%).

Regarding HR department, the analysis of the data has shown that there is a high number (28.6%) of foreign agro-food companies in Serbia which do not have HR staff or HR department at all. Majority of companies (71.4%) has some kind of HR department: 12 companies (28.6%) have one employee in charge of HR processes, 13 companies (31%) employ between 2 and 5 people in their HR department, while only 5 companies have more than five employees responsible for HR-related tasks (Table 1).

Table 1. Size of HR department

No. of employees in HR department	No. of companies	%
0	12	28,6
1	12	28,6
2	13	31
more than 5	5	11,9
Total	42	100

Source: According to data from Ratković, 2014.

It is usually suggested in the literature and practice that a company which employs 75 to 100 full time employees should consider employing at least one person responsible only for HR-related matters (human resource manager), (Barnard et al., 2012). Research has shown that existence of HR function highly depends on the size of the company- where smaller subsidiaries usually don't have HR departments or HR managers. Having in mind that smaller companies (usually with less than 50 employees) cannot afford to employ one person in charge of HR activities, crucial HR activities in such companies are usually performed and controlled by general manager or the owner, and other HR related activities may be delegated to other managers depending on their nature. Larger companies usually have a separate HR department. This research confirms this assumption, as all large companies (with more than

250 employees) have an HR department, where 88.9% of them have 2 or more employees in HR department. None of respondent small companies has an HR department. The size of HR department varies depending on the total number of employees in the company, and increases with the increase of the size of the company- HR departments consisting of 5 or more employees may be found only in large agricultural and food processing foreign-owned companies in this sample.

Analysis and results

The analysis of data has shown that majority of companies perform most of HRM activities. Thus, it may be claimed that Hypothesis 1 was supported. Analysis of each particular HR activity in surveyed agricultural and food processing companies performed through multinomial logistic regression led to the following results. Regarding HR planning, the analysis has shown that all surveyed companies plan their HR needs. Majority (66.7%) of companies plan their HR needs both on long-term (most often annually) as well as short-term, while those remaining make only short-term HR plans. The analysis has shown that the only variable which influenced HR planning process was the number of employees in HR department. Found relationship was statistically significant and positive, meaning that increased number of employees in HR department will result in increased likelihood that a company will make both short-term as well as long-term HR plans (rather than only short-term plans), (Table 2). Thus, only Hypothesis 5 was supported for this HRM activity.

Table 2. HR planning

HR planning a		B	Std. Error	Wald	df	Sig
Long-term and short-term	Intercept	-2,5	1,04	5,781	1	0,016
HR planning	Size of HR dept.	4,125	1,278	10,417	1	0,001

Note: a - the reference category is: 'Only short-term HR planning'.
Source: According to data from Ratković, 2014.

All surveyed agro-food companies recruit job candidates. The analysis has shown that there is an equal number of companies which perform recruitment by themselves and those which outsource this HRM activity, while the performance of this HRM activity depends on the size of the company. The relationship found between these variables was positive and statistically significant (Table 3), suggesting that the increase of the total number of employees leads to increased likelihood that recruitment process will be done in-house, rather than outsourced. Thus, it may be claimed that in terms of recruitment only Hypothesis 2 was supported.

Table 3. Recruitment

Recruitment [a]		B	Std. Error	Wald	Df	Sig.
Performed in the company	Intercept	-4,289	1,429	9,009	1	0,003
	Company size	0,022	0,008	8,528	1	0,003

Note: a - the reference category is: 'Recruitment outsourced'.
Source: According to data from Ratković, 2014.

Analysis has shown that all surveyed companies perform selection process, 64.3% of them perform this process by themselves, while only 35.7% of them outsource this activity. The results of this analysis have confirmed that the decision on the way of performing this activity depends on the size of HR department. This relationship was positive, meaning that more employees in HR department increase the likelihood that the company will perform selection itself (rather than delegate this process to an HR agency). Thus, support was found for Hypothesis 5 for this HRM activity; however, this relationship was not statistically significant.

The results of the survey have shown that majority of companies (78.6%) organize training programs for their employees: 17 companies organize indoor trainings, while 16 of them outsource this HRM activity. The analysis confirmed that the use of training programs in foreign-owned agricultural and food processing companies in Serbia depends on the size of HR department, where more employees in HR department lead to higher likelihood that training programs will be organized within the company, rather than outsourced. Thus, support was found for Hypothesis 5 for this HRM activity; however, this relationship was not statistically significant.

Performance appraisal was not common in all respondent companies- half of companies formally evaluate performance of their employees (and there was only one company which outsourced this activity). Company size was found to have an impact on the decision of the company to perform this activity itself, or outsource it (statistically significant relationship was found), (Table 4). Thus, Hypothesis 2 was supported for this HRM activity.

Table 4. Performance appraisal

Performance appraisal [a]		B	Std. Error	Wald	df	Sig.
Performed in the company	Intercept	-2,296	0,742	9,582	1	0,002
	Size of company	0,009	0,003	7,748	1	0,005
Outsourced	Intercept	-3,803	1,484	6,565	1	0,01
	Size of company	0,005	0,006	0,902	1	0,342

Note: a - the reference category is: 'Performance appraisal does not exist'
Source: According to data from Ratković, 2014.

Additionally, support was found for Hypothesis 5, as the number of employees in HR department was found to have an influence on the likelihood that the company will perform formal performance appraisal process, but this relationship was not statistically significant.

Surveyed agricultural and food processing organizations conduct performance appraisal on annual basis (81%) or twice a year (19%). It was found that the frequency of performance appraisal of employees depends on the number of employees in HR department, where higher number of employees in HR department increases the likelihood that company will formally evaluate performance of their employees more frequently than once a year (the relationship found was negative, but not statistically significant).

Cross-tabulation was used to examine the relationship between different HRM processes. The analysis of data has shown that there is a statistically significant relationship between HR planning and recruitment process performed by surveyed agro-food companies (p=0,000), (Table 5). The majority of companies which perform both short-term and long-term HR planning perform recruitment of potential job candidates themselves, while companies which plan their HR needs only on a short-term mainly outsource recruitment process.

Table 5. Chi-Square Tests (HR planning vs. recruitment)

HR planning vs. recruitment	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	15,429 [a]	1	0,000		
Continuity Correction [b]	12,964	1	0,000		
Likelihood Ratio	17,516	1	0,000		
Fisher's Exact Test				0,000	0,000
Linear-by-Linear Association	15,061	1	0,000		
No. of Valid Cases	42				

Note: a - 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.00.
b - Computed only for a 2x2 table.
Source: According to data from Ratković, 2014.

Similar relationship was found between HR planning and performance appraisal process. All companies which perform both short-term and long-term HR planning also have formal performance appraisal of their employees. On the other hand, companies which plan their HR needs only on a short-term mainly do not formally evaluate performance of their employees. This relationship is statistically significant (p=0,000), (Table 6).

Table 6. Chi-Square Tests (HR planning vs. performance appraisal)

HR planning vs. performance appraisal	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21,000[a]	2	0,000
Likelihood Ratio	26,734	2	0,000
Linear-by-Linear Association	20,024	1	0,000
No. of Valid Cases	42		

Note: a - 2 cells (33.3%) have expected count less than 5. The minimum expected count is 0.33.
Source: According to data from Ratković, 2014.

Regarding the relationship between recruitment and performance appraisal process in surveyed companies, it may be noticed that the majority of companies which recruit potential job candidates themselves also apply their own performance appraisal process. On the other hand, companies which mainly outsource recruitment process usually do not formally appraise performance of their employees. The relationship found is statistically significant (p=0,000), (Table 7).

Table 7. Chi-Square Tests (recruitment vs. performance appraisal)

Recruitment vs. performance appraisal	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18,848a	2	0,000
Likelihood Ratio	20,866	2	0,000
Linear-by-Linear Association	17,367	1	0,000
No. of Valid Cases	42		

Note: a - 2 cells (33.3%) have expected count less than 5. The minimum expected count is 0.50.
Source: According to data from Ratković, 2014.

Concluding remarks

This research conducted in 42 foreign-owned agricultural and food processing companies in Serbia intended to examine the degree to which these companies implement key HRM activities (planning, recruitment, selection, training, performance appraisal), and to discover whether they mainly perform these activities by themselves or through outsourcing. The analysis of data confirmed the expectations that the surveyed companies mainly perform most of key HRM activities. The findings have shown that all examined HRM activities are mainly performed in-house, rather than outsourced. A possible explanation may be that surveyed companies originate mainly from developed Western countries where modern methods of HRM are widely applied, and thus implement their knowledge and experience in their subsidiaries in Serbia.

Certain variables (primarily size of company and size of HR department) were found to influence the decision of a particular agro-food company to implement its own HRM processes rather than outsource key HRM activities. As far as HR planning is concerned, which is performed in-house in all surveyed companies, companies with larger HR departments are more committed to HR planning process (i.e. they make both annual HR plans as well as short-term plans), than companies with less staff responsible for HR-relates issues, which due to lack of experience, plan their HR needs only on a short-term basis. Larger foreign-owned agro-food companies operating in Serbia prefer in-house recruiting in order to find qualified job candidates. Since they have more resources and more employees which may be delegated to this process, as well as much more experience in all business processes comparing to small companies, they tend to develop their own specific recruitment methods and techniques and it is thought that they may find the candidates more quickly and efficiently when they perform recruitment in-house. Owning to lack of knowledge and experience smaller companies covered by this survey do not apply performance appraisal of their employees. Unlike them,

larger companies were found to implement formal performance appraisal, as one of crucial HRM activities aimed at motivating employees and improving their performance on a long-term basis.

The analysis has found that HR planning, recruitment and performance appraisal are usually interdependent processes in foreign-owned agricultural and food processing companies in Serbia. This may lead to the conclusion that those companies which are extensively committed to HR planning (companies which plan their HR needs not only *ad hoc*, but also make long-term plans), prefer in-house recruitment and formal performance appraisal. On the other hand, companies which usually do not plan their HR needs on a long-term, usually outsource recruitment process and don't have formal performance appraisal of their employees.

Having in mind limited literature and empirical research dealing with the implementation of different HRM practices in agricultural and food processing companies (in general and in Serbia), the findings of this study may be useful both for foreign agro-food companies which plan to enter specific Serbian market, as well as local companies which still lack experience and knowledge, and tend to learn from more experienced foreign companies (mainly multinational companies) and often copy their methods of performing key processes.

Literature

1. Baptista, R. D. (2012): *Technological Transition and the New Skills Required by the Agribusiness Sector*, International Food and Agribusiness Management Review, vol. 15, spec. issue A, pp. 105-109, available at http://ifama.i4adev.com/files/%252819%2529%2520Baptista4.pdf

2. Barnard, F., Akridge, J., Dooley, F., Foltz, J. (2012): *Agribusiness management* (4th ed.), Routledge, New York, USA.

3. Barney, J. B. (1991): *Firm Resources and Sustained Competitive Advantage,* Journal of Management, vol. 17, no. 1, pp. 99–120.

4. Berde, C. (2006): *Human resource management in Hungarian agriculture,* Jahrbuch der Österreichischen Gesellschaft für Agrarökonomie, no. 15, pp. 157-164, available at: http://oega.boku.ac.at/fileadmin/user_upload/Tagung/2005/05_Berde.pdf

5. Bitsch, V. (2009): *Personnel Management Research in Agribusiness,* 19th Annual World Forum and Symposium of the International Food and Agribusiness Management Association, Budapest, June 20-23, available at:www.ifama.org/events/conferences/2009/cmsdocs/1067_paper.pdf

6. Brewster, C., Sparrow, P., Vernon, G. (2007): *International Human Resource Management* (2nd ed.), CIPD, London, UK.

7. Bugar, D., Papić Blagojević, N. (2009): *Konkurentnost agrobiznis sektora Srbije u funkciji poboljšanja spoljnotrgovinske razmene,* Škola biznisa naučnostručni časopis, no. 3, pp. 43-48.

8. Contò, F., Fiore, M., La Sala, P., Papapietro, P. (2012): *The Role of Education, Knowledge and Human Resources for the Agricultural Development in the Perspective of New Cap: An Hypothesis of Change in Basilicata*, Applied Studies in Agribusiness

and Commerce, no. 1-2, pp.123-129.

9. Cromer, D. (2008): *State of HR Management in Serbia,* Cromergroup, University of Liverpool (eds), UK.

10. Dessler, G. (2011): *Human Resource Management (12th ed.),* Prentice Hall, Boston, USA.

11. Grozdanić, R. (2013): *Agribusiness and Agro-Industrial Strategies, Policies and Priorities for Achieving Higher Competitiveness, Employability and Sustainability in the Western Balkans Region,* Friedrich-Ebert-Stiftung, Regional Project for Labour Relations and Social Dialogue in South East Europe, Belgrade, Serbia.

12. Mihailović, B., Cvijanović, D., Paraušić, V. (2013): *Analiza performansi primarne poljoprivredne proizvodnje i prehrambene industrije Srbije,* Agroznanje, vol. 14, no. 1, pp. 77-85.

13. Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia (2014): *Strategija poljoprivrede i ruralnog razvoja Republike Srbije za period 2014-2024. godine,* Official Gazette of the Republic of Serbia, no. 85/2014, Belgrade, available at http://uap.gov.rs/wp-content/themes/uap/STRATEGIJA%202014-2020%20.pdf

14. Morgan, J. M., Reynolds, C. M., Nelson, T. J., Johanningmeier, A. R., Griffin, M., Andrade, P. (2004): *Tales from the Fields: Sources of Employee Identification in Agribusiness*, Management Communication Quarterly, vol. 17, no. 3, pp. 360-395.

15. Mugera, A. W. (2012): *Sustained Competitive Advantage in Agribusiness: Applying the Resource-Based Theory to Human Resources*, International Food and Agribusiness Management Review, vol. 15, no. 4, pp. 27-48, available at: http://ageconsearch.umn.edu/bitstream/138318/2/20120017_Formatted.pdf

16. Mugera, A. W. (2010): *Does Good Personnel Management Practices give Agribusiness Firms a Competitive Advantage?,* Annual National Conference of the Australia Agricultural & Resources Economics Society, February 10-12, Adelaide, South Australia.

17. Noel, J., Qenani, E. (2013): *New Age, New Learners, New Skills: What Skills Do Agribusiness Graduates Need to Succeed in the Knowledge Economy?,* International Food and Agribusiness Management Review, vol. 16, no. 3, pp. 17-36.

18. Ratković, T. (2014): *Anketa o HR procedurama i praksama u filijalama multinacionalnih kompanija u Srbiji,* interna dokumentacija (upitnici), Fakultet organizacionih nauka, Univerzitet u Beogradu, Beograd.

19. Siva Rama Krishna, K., Ramesh, K., Gangadhara Rao, M. (1995): *Human Resource Management in Agriculture,* Discovering Publishing House, New Delhi, India.

20. Svetlik, I., Barišić, A. F., Kohont, A., Petković, M., Aleksić Mirić, A., Slavić, A., Vaupot, Z., Poór, J. (2010): *Human Resource Management in the Countries of the Former Yugoslavia,* Review of International Comparative Management, vol. 11, no. 5, pp. 807–833.

21. Vapa Tankosić, J., Stojsavljević, M. (2012): *New perspectives for economic growth: Agribusiness as Serbia's way out of financial crisis,* in: European Integration Process in Western Balkan Countries, Teixeira, P., Portugal Duarte, A., Redžepagić, S., Erić, D., Andrejević, S. (Eds.), Faculty of Economics of the University of Coimbra, Coimbra, Portugal, pp. 726-740.

22. Venclová, K., Königová, M., Fejfar, J. (2013): *Current State of the Employee Performance Appraisal System in Agricultural Organizations in the Czech Republic,* Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, LXI, no. 4, pp. 1183-1189.

23. Wilk, E., Fensterseifer, J. (2003): *Towards A National Agribusiness System: A Conceptual Framework*, International Food and Agribusiness Management Review, vol. 6, no. 2, pp. 99-110.

MENADŽMENT LJUDSKIH RESURSA U POLJOPRIVREDNIM I PREHRAMBENIM KOMPANIJAMA U STRANOM VLASNIŠTVU U SRBIJI

Tatjana Ratković[2]

Rezime

Cilj ovog rada je da pokuša da ispita u kojoj meri poljoprivredne i prehrambene kompanije u stranom vlasništvu u Srbiji primenjuju ključne procese menadžmenta ljudskih resursa, da utvrdi da li ove procese sprovodi kompanija ili ih poverava specijalizovanim agencijama, kao i da identifikuje varijable koje imaju uticaj na način sprovođenja ovih procesa u kompanijama. Istraživanje sprovedeno u 42 kompanije potvrdilo je očekivanja da analizirane kompanije sprovode većinu ključnih aktivnosti menadžmenta ljudskih resursa. U zaključku rada navodi se da se sve analizirane aktivnosti uglavnom sprovode u kompanijama (tj. kompanije ređe angažuju agencije specijalizovane za obavljanje tih poslova), dok način na koji kompanija sprovodi ključne procese upravljanja ljudskim resursima najčešće zavisi od veličine kompanije i veličine odeljenja za ljudske resurse, što ukazuje na to da strane kompanije koje posluju u ovom sektoru u Srbiji moraju uzeti u obzir ove varijable prilikom donošenja odluke o tome da li da same sprovode ključne aktivnosti menadžmenta ljudskih resursa ili da njihovo sprovođenje povere specijalizovanim agencijama.

Ključne reči: *menadžment ljudskih resursa, poljoprivreda, prehrambena industrija, regrutovanje, vrednovanje učinka zaposlenih.*

2   Dr Tatjana Ratković, Asistent, Fakultet organizacionih nauka, Univerzitet u Beogradu, Jove Ilića 154, 11000 Beograd, Srbija, Telefon: +381 11 39 50 898, E-mail: tatjana.ratkovic@fon.bg.ac.rs

PERSPECTIVES OF DEVELOPMENT OF GREEN JOBS IN BULGARIA[1]

Zornitsa Stoyanova[2], Hristina Harizanova[3]

Summary

The transformation to green sectors of the economy in Bulgaria leads after it the need of new type of professions, which would be capable to cope with the new conditions and requirements which different businesses are facing.

The knowledge of creation of green jobs in Bulgaria is insufficient, which makes this paper state of art. Green jobs in Bulgaria are connected with transfer of business activities to green ones. The paper analyzes and evaluates the current conditions of creation of green jobs in Bulgaria. It is proposed analysis of the requirements in Bulgaria about the eligible criteria to apply for funding under the measurement of green jobs; based on research SWOT analysis of creation of green jobs. The results are systematized in findings, conclusions and policy recommendations, as changing conditions of applying to measurement, payment connected to employees, and etc. As well is proposed cooperation between other existing measurements for reaching sustainable employment in Bulgaria.

Key words*: green jobs, sustainability, SWOT, policy recommendation.*

JEL: *Q01, Q58*

Introduction

Green growth is the only form of sustainable development in the future for Bulgaria, Europe and the world. Green jobs are created in the EU, mainly as a result of environmental solutions related to the fight against climate change. Industry and environment need to work together because in long-term interests are to achieve sustainability. Developing a green economy will generate a new workforce and transfers between sectors and labor markets on national and international level. One of the methods is by creating green jobs to support employment focused on energy efficiency initiatives to prevent climate change,

---

2   Zornitsa Stoyanova, Ph.D., Associated Professor, University of National and world Economy, Studentski grad 1700, office 1065, Sofia, Bulgaria, Phone: +359 2 81 95 460, E-mail: zori_stojanowa@yahoo.de

3   Hristina Harizanova, Ph.D., Chief assistant professor, University of National and world Economy, Studentski grad 1700, office 1065, Sofia, Bulgaria, Phone: +359 2 81 95 460, E-mail: h.harizanova@gmail.com

environmental technologies and others. Green growth is a form of sustainable development and green jobs support this process (EC, 2013). The world-wide goals of sustainable growth, jobs, poverty reduction and equitable development cannot be achieved unless directly tackled at the rural level and green jobs are the connection (Luca, 2011). In official papers of European commission for "Rural development strategies" (EC, 2014) green jobs are directed as a way for reaching sustainability.

Although in Bulgaria the green job is not still very well researched, there are evidences of international experiences. Many authors (Sharma, 2011; Renner, 2008) describe green jobs, as a decent and not decent. As a definition is used "…work that helps bring about and maintain a transition to environmentally sustainable forms of production and consumption" (Sharma, 2011). According to the author there is still a big gap between green professions and decent work.

Other authors (Llewellyn, Hendrix, 2008) are stressing the need of green job, as a tool for increasing employment. Furthermore the concept of green jobs is described as a tool for synergies in simultaneously between employment, energy and environment issues (Jacobs, 1994). Green jobs, employment that contributes to protecting the environment and reducing humanity's carbon footprint, will be a key economic driver of the 21st century. Green jobs will play a role within the various industries, energy production, construction, transportation, energy-intensive industries, recycling and re-manufacturing, and agriculture and forestry (Renner et al., 2008). Some author's opinion is that in developed economies, environment related jobs tend to be concentrated in activities directly linked to decarbonizing energy supply and improving energy efficiency, pollution control and eco-friendly services (Jarvis et al., 2011). Farrell (2011) summarized most popular green professions according a research. By his point of view most suitable for green transformation of the economy are professions as: ecotourism, sustainability coordinators, city planning professional, sustainable education, hydrologist, waste disposal specialist, park ranger, camp counsellor, animal conservationist, and etc.

On international level on problems of implementing green activities incl. green jobs is working International labour office (ILO), Department of statistics. Experts (Stoevska, Hunter, 2012) are exploring best practice and they state that green economy is not replacement for sustainable development, but it means to achieve it. They gave ILO's definition of green job according Green Jobs Program. It includes that green jobs will support environment and this will happen by:

- Reduce consumption of energy and raw materials;

- Limit greenhouse emissions;

- Minimize waste pollution;

- Protect and restore ecosystems.

The authors of the paper use definition of green jobs given by UNEP (UNEP/ ILO/IOE/ ITUC, 2009) and it defines green jobs as "… work in agricultural, manufacturing, research

and development (R&D), administrative, and service activities that contribute substantially to preserving or restoring environmental quality. Specifically, but not exclusively, this includes jobs that help to protect ecosystems and biodiversity; reduce energy, materials, and water consumption through high efficiency strategies; de-carbonize the economy; and minimize or altogether avoid generation of all forms of waste and pollution''.

Methodology

There are different specifications of the green professions in EU countries, including Bulgaria and each country is free to define and observe the creating of green jobs. Complete and unified model for the creation of green jobs could not be applied. That is why each country is trying to propose and develop own approach for reaching the results of creation of green jobs. In the paper are described the specific conditions and perspectives in front of that type of employment.

Findings and conclusions in the paper are based on the results of university researched project Green jobs - tool of ecologization of Bulgarian Economy (Miteva et al., 2014).

The main aim of the paper is to analyze and evaluate the current conditions of green jobs in Bulgaria and on this basis to systematize findings, conclusions and policy recommendations.

The publication is divided into several parts. The main tasks are to:

1) Analyze the legal framework for the creation of green jobs;

2) Describe and evaluate the perspectives and barriers in front "green jobs" in Bulgaria;

3) Propose policy recommendations and general conclusions.

In the first part - Legal framework for the creation of green jobs is given general overview of the current condition of policy in Bulgaria connected to green jobs. This part is mainly literature based and is used systematic approach for gathering and analyzing the legal framework. Here is made comparison among three sides: employer, employee and government. The legal framework in the sector presents the requirements of the measure for employer, such as the requirements for employee. Main place is taken by sectors of support and alternative employment measures in Bulgaria.

In the second part of the paper - Perspectives and barriers in front green jobs in Bulgaria are developed on systematical approach. The content includes:

1. State of art of potential jobs in the EU, which can be transformed into green or are already green. This part is organized as analysis and shows what is Bulgarian background compared by several statistical criteria: number of potential employment of green jobs on EU level, percentage of total employment related with green jobs; development of the payment of the measure "Green jobs" and eligible payment by it.

2. Analysis of the requirements in Bulgaria about the eligible criteria which employers need to obtain to be able to apply for funding under the measurement of green jobs. The two main conditions ISO 14001 and EMAS are tracked on EU level and Bulgaria

is compared with the data. The used approach in this part is comparative. The used data is gathered by the official statistic of the EU countries and Bulgarian National statistic.

3. SWOT analysis of creation of green jobs, which is according research under the project. The survey was conducted in December 2014. Information is summarized on the basis of meetings with experts from municipal and regional structures involved in the implementation of green jobs in the country.

Third part of the paper presents policy recommendations and general conclusions. As a result of meetings with experts, steak holders, business structures and employers are revealed gaps in the existing policies in the sector. On this base are summarized general conclusions.

Legal framework for the creation of green jobs

In 2010 a new measure for the creation of green jobs was introduce by amendment of the Law for Promotion of Employment. It aims to encourage employers who create jobs in economic activities which support environmental protection. This measure follows one of the leading priorities in the Europe 2020 - the strategy for development of environment friendly and competitive economy, which use resources more efficient (Ministry of Labour and Social Policy, 2014).

The law define as "green" jobs those which are launched in economic activities related to production of goods and provision of services supporting the environment, according to a list of economic activities approved by the Minister of Environment and Water and the Minister of Labour and Social Policy in 2010. It is updated every year.

The employer should recruit more than one sequential unemployed person directed by employment offices. Employers may pay a higher remuneration of the funds granted by the State, and to detain for a longer time hired workers. Promoting measure provides financial sources for each opened green job, on which was hired an unemployed person directed by the division of the Employment Agency for the time during which the person has been employed, but for no more than 12 months. It is necessary the employer to reveal green job and to keep hired persons at least 6 or 8 months. The social security contributions are not paid out under the measure for green jobs, so the employer needs to pay them out from his own budget (Employment Agency, 2010).

The application procedure for green jobs is related to that employer who wants to use this preference. Application form about vacancies and the necessary application documents must be submitted to the Employment office. The employer must describe written to the employment office the nature of the work, educational and training requirements for the applicant and the procedure for selecting candidates. Requests are registered and entered into an automated information system. After approval by the Collaboration Council, the employer signs a contract with an approved model for hiring people in employment offices for allocation from the State budget.

All employers who are certified in one of three certification marks - environmental standards

ISO: 14001, management of the environment / EMAS / and European Eco-label scheme are eligible for applying. Some industries, aimed to improving the environment can apply without the need to have these certificates. These are the sectors mainly related to waste water treatment, waste management, waste sorting, recycling, reuse of waste, production waste eco materials and products made from waste wood, the production of energy efficient equipment, environmental transport, etc.

The candidate for a green job, have to be unemployed person, who is registered not less than 6 months in Local employment office. Registration requires many documents such as identity document; applying - declaration established in a form approved by the Executive Director of Employment office; proof of address registration at the current address; documents acquired education and / or qualification; documents that certify retirement. In this connection for each registered person shall be issued a registration card.

Economic activities linked to the production of goods and provision of services supporting environment are divided into seven sectors. They are presented on scheme 1.

Scheme 1. Economic activities by sectors

Sector	ACTIVITIES
C	• Manufacturing, the economic activities associated with production of other products of wood; manufacture of articles of cork, straw and plaiting materials; production of pulp; molding and processing the glass; production of devices for the management and distribution of electricity production of other electrical equipment; Production of engines and turbines, except aircraft, vehicle and cycle engines; manufacture of hydraulic pumps, hydraulic and pneumatic motors; production of furnaces and burners; repair of machinery and equipment; repair of electrical equipment.
D	• Production and distribution of electricity, heat and gaseous fuels with one economic activity of producing electricity
E	• Water supply; sewerage, waste management and recovery by economic activities supported in this sector are related to the collection, treatment and supply of water; collection, disposal and treatment of sewage; collection of hazardous waste; collection of non-hazardous waste; treatment and disposal of non-hazardous waste; processing and disposal of hazardous waste; disposal of waste; recycling of sorted waste; remediation services and other waste management services.
F	• Construction of hydraulic equipment with economic activities as construction of water supply, sewage, heating and air conditioning systems; other specialized construction activities
H	• Transportation and storage, as economic activities are passenger rail; urban and suburban passengers transport.
N	• Administrative and support service activities with economic activity formation and maintenance of green areas
R	• Culture, sport and entertainment, as economic activity in this sector is related to the activities of botanical and zoological gardens, nature parks and reserves

Source: Employment agency, 2010.

Registered in the Employment offices unemployed persons may be directed to green jobs if their registration has been maintained not less than 6 months. They can occupy the following positions according to the National Classification of occupations:

✓ Qualified workers and related crafts;

✓ Machine operators and assemblers;

✓ Professions which don't require special qualification: workers for waste collection or workers sorting waste etc.

Funds for measure "Green jobs" are provided to employers by the recruitment of an unemployed person directed by the Employment office. Employers must provide a set of documents, such as: a written application form; written request to direct unemployed to work in announced vacancies; written agreement with the local employment office; a written declaration that the person doesn't have public obligations, obligations for non-contracted programs, measures and training as well as projects under the Operational Programme "Human Resources Development"; letter from the National Statistical Institute to determine the code of the main economic activity of the employer; a copy of the document certifying the registration under the scheme EMAS, implemented system of environmental management according to standards BDS EN ISO 14001, EN ISO 14001 or ISO 14001; awarded right to use the eco-label of the Community.

There are as well some specific requirements and documents if green jobs is created in a sector such as economic activity in Sector D "Production and distribution of electricity, heat and gaseous fuels". The employers need to give a copy of the "Guarantee of origin", issued by the Agency for Sustainable Energy Development.

In Bulgaria different employment measurement exist which are competing with green job measure. Main popular incentives for employers are - recruitment of persons under 29 years old; measure for long-term unemployed, a measure of recruitment for a part-time internship and etc. The applying procedure for some of these measures is more simple then this one of green jobs. In the same time the benefits for both sides (employer& employee) are equal or higher to the other not green employment measurements. This may leads to redirect unused funds from measure "green jobs" to other measures that are more attractive to employers.

Perspectives and barriers in front green jobs in Bulgaria

The transforming of professions in the EU to green ones is based on green technology and economic activities influenced by increased demand of unique type of work (OECD, 2012). By using this definition, are identified three categories of professions that are subject to a green economy:

• New green professions;

• Existing professions which are updated with new skills related to green economy;

• Employers who convert to green activities.

Green jobs largely differ from traditional professions. In most European countries, the new green jobs are directed to sectors of renewable energy, construction sector, energy efficiency, waste and transport. Each country makes own rules what exactly is a "green profession" and what requirements have to obtain one working place to be called "green".

As already was mentioned in previous part of the paper the environment standards are the first step a firm to transform its activity to environmental friendly ones. The potential for job creation is linked to the production of renewable energy, energy efficiency, waste management and water, air quality, restoration and conservation of biological diversity and the development of green infrastructure. All this new type of jobs could bring significant and sustainable changes in the business cycle.

Green jobs are created in the EU, mainly as a result of environmental solutions related to the fight against climate change. However, when EU focuses the attention to green jobs the purpose was aimed mainly to support organizations to transform to green activities. Table 1 presents the potential positions which can be called as green jobs in EU.

Table 1. Potential jobs in the EU, which can be transformed into green or are already green

Country	Number	Country	Number
Germany	361,360	Romania	16,800
France	174,736	Greece	12,920
Italy	108,150	Hungary	11,550
Spain	98,300	Latvia	9,300
Sweden	54,780	Slovakia	7,030
Finland	48,620	Lithuania	5,850
Austria	41,600	**Bulgaria**	**5,470**
Denmark	36,400	Ireland	3,500
UK	31,700	Slovenia	3,375
Poland	28,450	Estonia	3,100
Belgium	22,670	Cyprus	1,095
Czech Republic	20,200	Luxembourg	500
Holland	19,180	Malta	150
Portugal	17,450	Total	1,144,236

Source: Sustainlabour, 2013.

Table 1 shows that Bulgaria is on bottom not only on nominal base, but on ratio as well, because the possible green jobs compared with total employment are 0.17%, where in Germany this percent is over 7% and they are planning to increase more. At the same time this is possible projection of employment.

Table 2 presents total number of green jobs and monthly salary for created green jobs in Bulgaria. The real situation of registered green jobs in Bulgaria is 515 (2013) of which only 400 are new working jobs (Table 2). For 2014 this number is decreasing and reaching bottom to 276 of which 100 new working places. This negative trend can be explained with very high requirements on one hand for the employers and on other hand very low payment for the employees. Under this measurement according to Employment agency the payment is the minimum salary to the workers. As well in the policy as a weak point can be mentioned that this payment is lower than the minimum wages for the some of the sectors. According on statistic data given by Capital Market SA more than a half of firms with ISO 14001 are in construction sector.

Table 2. Green jobs under measurement of green employment

Year	Total number of green jobs	Monthly salary, BGN (1 Euro= 1.95583 BGN)
2011	795	270
2012	n./a.	290
2013	515	310
2014	276	340

Source: Authors calculation based on data of Employment agency statistic.

The summarized field of activities of those firms is dedicated to high construction and associated infrastructure; high, low and hydro construction (buildings and structures, objects of technical infrastructure-water, sewage, hydraulic, energy, transport, etc.); construction of civil, industrial and infrastructure projects, construction, repair and reconstruction of the transmission, distribution, industrial and building pipelines for steam, hot water, gas, oil and other combustible fire resistant fluids; design, construction and repair of roads, buildings, water and sewage systems, earthworks and other construction works etc. These activities are mentioned because the minimum wage of the salary which is by low in Bulgaria starts from 360 BGN for unqualified jobs and reaching 825 BGN for management positions. Conclusion can be made that if any firm wants to use government support for creating green jobs have tree possibilities: 1- to hire only unqualified jobs and opening positions which do not require special education or qualification; 2 - to hire management positions to which they can use that payment as a supporting additional payment; 3 - to redirect employment to other programs, which may pay social security, which in program for green job is not included.

Implementation of ISO 14001 in Bulgaria as a requirement of green jobs

The implementation of standard ISO 14001 by stakeholders from business, industry, public authorities and non-governmental organizations shows concerns of the organization to reduce global pollution by controlling the impact of the environment with their activities, products or services and is needed requirement to create green jobs. ISO 14001 was adopted as a national standard by more than half of the national members of ISO community and its promotion by governments all around the world.

In Bulgaria according a survey made on EU level in registers can be found 1373 firms which implemented ISO 14001(2013). The figure 1 presents the development of ISO since 2001 up to 2013, and is made power trend for 2014, 2015, which shows that at the end of the year the firms could be around 1500 and above. According to that information we can conclude that is possible around 1500 firms in the country to be able to launch green jobs.

Bulgaria is on 17th place in Europa of number of firms which has ISO 14001. The statistic is very positive according to the small size of the country. The top three countries for the total number of certificates worldwide are China, Japan and Italy. The leaders in EU are Italy with 24662 firms, UK – 16879 and Spain with 16051.

Nearly 50% (49%) of the firms implemented ISO 14001 up to 2014 in Bulgaria are in "Construction (building) sector", followed by "Public administration sector and defence; compulsory social security" (7%), "Real estate, renting and business activities (5%)" (Harizanova, 2015; Peicheva et al., 2014).

Figure 1. Development of ISO in Bulgaria 2001-2015
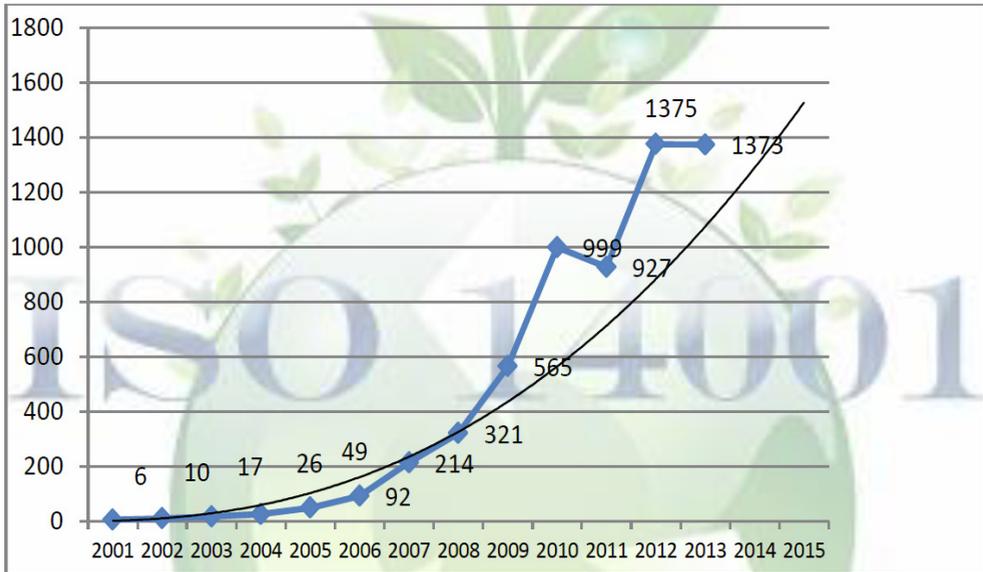
Source: Authors calculations based on data of IOS (2013).

With equal percentages of distribution (5%) are the sectors:

- real estate,
- renting and business services,
- manufacturing of electrical and optical equipment,
- trade,
- repair of motor vehicles,
- motorcycles and personal belongings and household goods,
- metallurgy and manufacture of fabricated metal products,
- machinery and equipment.

In agriculture, hunting and forestry, which is traditional for our country has only 4 companies that have managed to obtain 14001 certificates. Their main activities are: - Construction and maintenance of park and decorative areas, sports fields and playgrounds, playgrounds, irrigation systems, landscaping and more. According to the collected data is seen that there are no in firms operating in agriculture which have ISO 14001certificate.

EMAS (Eco-Management and Audit Scheme) as a requirement of green jobs

EMAS is the premium environmental management tool to achieve environment friendly activities. It leads to enhanced performance, credibility and transparency of registered organizations. EMAS is a voluntary tool available for any kind of organization aiming to:

- Improve its environmental and financial performance;
- Communicate its environmental achievements to stakeholders and society in general.

Table 3. Numbers of organization certified by EMAS in EU in 2015

Organizations which have EMAS 2015			
Country	**Organizations**	**Country**	**Organizations**
IT	1049	EE	7
ES	908	LT	5
DE	329	NL	5
AT	276	FI	4
PT	56	**BG**	**3**
DK	48	RO	3
PL	44	IE	2
GR	42	SK	2
UK	40	LU	1
CY	35	MT	1
BE	29	SE	1
CZ	25	HR	0
HU	21	LV	0
FR	13	SI	0
NO	9	**Total**	**2958**

Source: EMAS, 2015.

The third revision to the EMAS Regulation has improved the scheme's applicability and credibility and strengthened its visibility and outreach. In Bulgaria EMAS was introduced by Regulation (EC) № 1221/2009 on the voluntary participation of organizations in a Community eco-management and audit scheme (EMAS), which entered into force on 11 January 2010. Unlike industry standards, such as ISO 14001 is, EMAS is integrated into the legal system of the European Union and applied directly by all Member States of the European Union. The EMAS requirements include those of ISO 14001, but with Regulation (EC) № 1221/2009, introducing some new elements that further enhances the credibility of the scheme. This is actually the scheme-standard for environmental management by any organization except that introducing an effective system of environmental management.

Unfortunately Bulgaria is lagging behind of implementing of EMAS and up to 04.2015 is represented only by 3 firms. Data shows *(Table 3)* that Bulgaria is on one of the last places of EMAS registered organizations, and after are only 9 countries. According to the topic of green jobs creations, that information shows that Bulgaria has no big potential for creating green employment, because only 3 firms are having the needed EMAS certificate.

SWOT analysis of implementation of green jobs in Bulgaria

To understand the opportunities and barriers in front of the green jobs is prepared SWOT analysis of Bulgaria in the studied area. Information is summarized on the basis of meetings with experts from municipal and regional structures involved in the implementation of these positions in the country. Summary is offered in table 4.

Some of the advantages of green jobs are connected with transfer of business activities to green ones. This leads to realizing the principles of sustainable development conception and ecologization of economy. Strong side of green jobs creation is that it is mechanism for decreasing unemployment rate. Countries could reach the principles established in national and EU programs through creating green jobs.

Table 4. SWOT analysis of implementation of green jobs in Bulgaria

Strong sides (Straights)	Possibilities (Opportunities)
Mechanism for decreasing unemployment rates; Transfer of business activities to green ones; Ecologization of economy; Reaching of the principles established in national and EU programs; Increasing prestige of the organizations; Social and ecological responsibilities of business to environment; Familiarity with terminology around climate change, renewable energy, and other environmental issues.	Creation of new professions on larger field of operation; Requalification of employees; Facilitation of the procedure of implementation of green jobs; Restructuring of employment from different sectors; Social security contributions to be paid out by state budget; Reaching sustainability more than one year per a green job under this supporting measure; Additional benefits to the employer.
Weak sides (Weaknesses) Complicated procedure of applying(employers); Short term of contracts; Social security paid by employer; High requirements for employers; Lack of a job history; Low payment per one new created green job.	**Threats** Applying of employers to more friendly programs for employment; No absorption of the program funds; Lack of interest of entrepreneur; Continuing decreasing trend of new created green jobs; High price of job creation of a green job compared to the traditional once.

Source: According to authors' opinion.

Implementing of green jobs is bringing some advantages for the business organizations such as: increasing their prestige through creating new green jobs and increasing their social and ecological responsibility to environment. Straights of green job are that they are familiar with terminology around climate change, renewable energy and other environmental issues. All this strong sides lead to possibilities of green jobs. One of them is the creation of new professions on larger field of operation. At the same time ecologization of economy through creating green jobs requires requalification of employees. There is restructuring of employment from different economic sectors because of the green jobs. Nowadays some of the jobs disappeared because of the ecological oriented economy of the countries and they are replaced by other different

jobs which are more ecological such as green jobs. Green jobs create employment which does not cause massive environmental damages. There is also facilitation of the procedure of implementation of green jobs. Other possibility is social security contributions to be paid out by state budget, because at the moment social security contributions is not subsidized and they are paid by the employer. It is possible to make green jobs more sustainable through reaching sustainability more than one year per a green job and additional benefits to the employer. Among the strong sides there are some weaknesses connected mainly with complicated procedure of applying and high requirements which create difficulties for employers. There are also weak sides like a short term of contracts which are for 12 months. Disadvantage of the measure Green jobs is the requirement employer to pay the social security to employee. There is lack of the job history which doesn't help to the manager to evaluate the employee. The payment per one new created green job in Bulgaria is low. Gathered together all weak sides of green jobs are assumed the main threats.

One of the threats is that employers could apply to other more friendly programs for employment, which applying procedure is easier. This leads to no absorption of the funds of measure green jobs. Serious threat in green job creation is high price per one new job in green sector compared to the traditional once. The creation of one green job in some countries (Germany, France) leads to loss of more than four jobs in industrial sectors which are more environmental unfriendly.

General conclusion and policy recommendation

Based on the analysis of the current conditions of green jobs in Bulgaria are made general conclusions as follows:

✓ Green jobs are created in the EU, mainly as a result of environmental policy. Development of green jobs requires interrelated policies governing environmental and social policies. The stress is on environmental dimension and the social dimension is of secondary importance.

✓ The number of green jobs in the last decade increased in most of the EU countries as a result of the various policies and initiatives taken at European level in the field of employment and environment. It exceeds the number of jobs in other sectors of the economy where there is a high risk of environmental pollution. There is a loss of jobs in sectors that are not environmentally friendly and create jobs in new sectors imposed by the development of green industry and economy.

✓ The number of created green jobs in Bulgaria for the period 2011-2014 is decreasing. This negative trend can be explained with very high requirements on one hand for the employers and on other hand very low payment for the employees.

✓ In Bulgaria around 50% of the firms who implemented ISO are in sector "Constructions", which explains the highest number of green jobs in the same sector.

✓ In Bulgaria are numbers of incentives suitable for employers to hire people. Many

employment measures are having influence on absorption of funds designed for "green jobs". The procedure for applying for some of these measures has been simplified and the conditions for applying for them are simpler for employers. This leads to redirect unused funds from measure "green jobs" to other measures that are more attractive to employers.

✓ The financial support from measure "Green job" is very low for some of the defined activities. According to this reason business organization which wants to use government support for creating green jobs have tree possibilities. On one hand they could hire only unqualified people and opening positions which do not require special education or qualification. On the other hand they could hire management positions to which they can use that payment as a supporting additional payment or to redirect employment to different programs, which may pay social security, which in program for green job is not included.

✓ The knowledge of creation of green jobs in Bulgaria is insufficient. The first statistical evidence is since 2011.

Based on the analysis of the current conditions of green jobs in Bulgaria and problems in this sector are made policy recommendations as follows:

✓ In relation to the labor market should be encouraged undertaken of specific programs to support professional education and qualification of those workers threatened by industrial change and who could lose their current job or level of income.

✓ The financial support under the measure "Green job" has to be equal or higher compared to minimum salary in the sector where the position is open. At the moment are observed high differentiations of minimum branch salaries, till the green job payment is fixed. Like this the measure green jobs can become more attractive.

✓ Social security contributions have to be paid out by state budget. This will motivate the employers to create green jobs even on this low paid basis. It is possible also employer to receive additional benefits such as qualification courses to the exciting personal connected with the green technologies.

✓ The duration of the measure of green jobs has to be longer than 12 months. This will make green jobs more sustainable.

✓ It is possible to improve the management of employment measurements. Creating green jobs has to be integrated with existing social employment measures. They should be cooperative between, and transfer possible candidates on the best possible working place. This leads after it to better absorption of the "Green jobs" measure's funds.

✓ It is possible to be made structural change of existing administration which aims to support the development of green jobs in Bulgaria. Administrative units should consulate employers about the steps how to achieve eligible criteria to create in his organization green job.

✓ One of the ways for increasing the number of absorption of the green jobs is via facilitation of the procedure of implementation of green jobs.

Literature

1. European Commission (EC), (2014): *Rural Development Programme for Denmark 2014-2020, Fact Sheet,* European Commission, Brussels, available at: http://europa.eu/rapid/press-release_MEMO-14-2628_en.htm, accessed at: April 2014.

2. European Commission (EC), (2013): *European Employment Observatory Review, Promoting green jobs throughout the crisis: a handbook of best practices in Europe 2013*, EC, Directorate-General for Employment, Social Affairs and Inclusion, Luxemburg, available at: http://ec.europa.eu/social/BlobServlet?docId=10295&langId=en

3. Employment agency (2010): *Selection procedure for employers by using promoting measures for employment and training under the Low of employment promoting, Measure - hiring unemployed persons with maintained registration at less than 6 months of "green jobs",* Employment agency, Sofia, Bulgaria, available at: www.az.government.bg/pages/myarka-naemane-na-bezrabotni-lica-s-neprekasnato-poddarzhana-registraciq-nad-6-meseca-na-zeleni-rabotni-mesta/

4. Farrell, C. (2011): *Green Jobs Inside the industry*, ABDO, Nord Mankato, Minnesota.

5. Harizanova, H. (2015): *Implementation of ISO 14001 in Bulgaria*, Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, vol. 15, no. 1/2015, pp.193-198, available at: http://managementjournal.usamv.ro/index.php/scientific-papers/current

6. International Organization for Standardization (IOS), (2013): *The ISO Survey of Management System Standard Certifications (1999-2013*), available at: www.iso.org/iso/iso-survey

7. Jacobs, M. (1994): *Green Jobs? The Employment Implications of Environmental Policy*, WWF, Surrey, United Kingdom.

8. Jarvis, A., Varma, A., Ram, J. (2011): *Assessing green jobs potential in developing countries, A practitioner 's guide,* ILO, Geneva, Switzerland.

9. Llewellyn, B., Hendrix, J. (2008): *A Guide to Eco-Friendly Employment,* Adams Media publishing, Avon, USA.

10. Luca, L. (2011): *The ILO's Rural Employment and Decent Work Programme Unleashing rural development through employment and decent work: A pressing need and timely investment,* ILO publishing, Genève, Switzerland, available at: http://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_158583.pdf

11. Ministry of Labour and Social Policy (2014): *National action plan for employment 2014*, Ministry of Labour and Social Policy, Sofia, Bulgaria.

12. Miteva, A., Stoyanova, Z., Harizanova, H., Peicheva, M., Doichinova, J., Kanchev,

I. (2014): *Green jobs - tool of ecologisation of Bulgarian Economy*, Research project, NID NI1-6/2014, Preliminary results, University of national and world economy, Sofia, Bulgaria.

13. OECD (2012): *Employment Outlook 2012, Chapter 4 "What Green Growth Means for Workers and Labour Markets: an Initial Assessment"*, pp. 163-217, OECD Publishing, Paris, France, available at: www.oecd.org/els/emp/EMO%202012%20 Eng_Chapter%204.pdf

14. Peicheva, M., Harizanova, H., Miteva, A. (2014): *Project Research of the needs to conduct social audit and implementation of standards of social and environmental responsibility in Bulgaria*, Research project, NID NI1-4/2014, Preliminary results, University of national and world economy, Sofia, Bulgaria.

15. Renner, M. (2008): *Green Jobs: Working for People and the Environment,* World Watch Institute, Washington DC, USA.

16. Renner, M., Sweeney, S., Kubit, J., Mastney, L. (2008): *Green Jobs: Working for People and the Environment*, World Watch Institute, Washington DC, USA.

17. Sharma, H. (2011): *Green Jobs and Decent Work: An Agenda for Sustainable Agriculture in India, "Will the „BRIC's Decade continue? – Prospects for trade and growth",* IAMO Forum, 23-24 June 2011, Halle (Saale), Germany, pp. 2, available at: http://ageconsearch. umn.edu/bitstream/115366/2/Sharma_IAMO_Forum_2011.pdf

18. Stoevska, V., Hunter, D. (2012): *Proposals for the statistical definition and measurement of green jobs*, International labour office, Department of statistics, Geneva, Switzerland, pp. 18, available at: www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/ event/wcms_195698.pdf

19. Sustainlabour (2013): *Green jobs and related policy frame works - an overview of the European Union,* February 2013, report, Sustainlabour, Madrid, Spain, available at: www.sustainlabour.org/documentos/Green%20and%20decent%20jobs-%20An%20 Overview%20from%20Europe%20FINAL.pdf

20. UNEP/ILO/IOE/ITUC (2009): *Green Jobs: Towards decent work in a sustainable, low-carbon world,* report, Publishing Services Section of United Nations Office at Nairobi, Kenya, available at: www.unep.org/PDF/UNEPGreenjobs_report08.pdf

21. EMAS, *Reports and statistics*, portal EMAS, European Commission, available at: http:// ec.europa.eu/environment/emas/register/reports/reports.do, accessed at: April 2015.

CONCENTRATION OF TOBACCO MARKET: EVIDENCE FROM SERBIA

Bojana Vuković[1], Kristina Mijić[2], Nataša Spahić[3]

Summary

This paper presents a research on market concentration of tobacco producers in the Republic of Serbia during 2010-2013. Market concentration was measured by Herfindahl Hirschman index (HHI) and Concentration index (CRn) based on independent variables: operating revenue, net earnings, equity and number of employees. The research of market concentration of tobacco producers based on operating revenue as the most referential variable indicated that the market of tobacco producers in the Republic of Serbia was highly concentrated and that it was an oligopoly. Leading companies dominated in the terms of the value of realized net earnings, equity and number of employees. Although leading companies had dominance in market share of Serbia, they had worse operating results in terms of effectiveness, structure of assets and financial performance in observed period.

*Key words***:** *production of tobacco, market concentration, Serbia*

JEL: *M 40, G17, Q10*

Introduction

Production of tobacco is a highly profitable branch of tobacco industry. Tobacco is mostly produced in Asia. China and United States are on the top of the world's tobacco production. In the international market tobacco production is represented by dominance of six companies: China National Tobacco Corporation, Japan Tobacco Inc., British American Tobacco, Philip Morris International, Altria Group Inc. and Imperial Tobacco Group. Market production and processing of tobacco in countries around the World is characterized by participation of these leading companies.

These six companies operate in domestic and international markets. Japan Tobacco Inc. covers about 70% of Japan's tobacco market. It owns 31 plantations at 23 locations. China National

---

1   Bojana Vuković, Ph.D, Teaching Assistant, Faculty of Economics Subotica, Segedinski put Street no. 9-11, 24000 Subotica, Serbia, Phone: +381 24 628 000, E-mail: bojanavuk@ef.uns.ac.rs

2   Kristina Mijić, Ph.D, Teaching Assistant, Faculty of Economics Subotica, Segedinski put Street no. 9-11, 24000 Subotica, Serbia, Phone: +381 24 628 000, E-mail: mijick@ef.uns.ac.rs

3   Nataša Spahić, Ph.D, Assistant Professor, Faculty of Sciences, Trg Dositeja Obradovića Street no. 3, 21000 Novi Sad, Serbia, Phone: +381 21 485 28 64, E-mail: natasa.spahic@dmi.uns.ac.rs

Tobacco Corporation, as a state-owned tobacco company produces and owns a portfolio of over 900 brands in the world's market. British American Tobacco is supplying 180 regional markets with over 200 products through its affiliated companies. Similarly, Philips Morris International through related companies operates in the European Union, Eastern Europe, Middle East, Africa, Asia, South America and Canada. Altria Group Inc., as one of the largest tobacco companies in the market, in its composition to 2008 has Philip Morris International. Imperial Tobacco Group operates in 160 countries through a large number of production departments. The business activities of the company are divided on tobacco and logistics.

Depending on the market share of leading and other companies in tobacco industry, the market can range from perfect competition to oligopoly. Higher concentration in the market of tobacco industry determines the behaviour of these large companies. In such circumstances, other companies have a problem with increasing competition, especially because market for tobacco products is particularly depended on changing prices.

The concentration on the different markets can be measured using several statistical and econometric methods, such as the Herfindahl-Hirschman index (HHI), Concentration ratios (CRn), Gini coefficient, Linda index, Hannah-Kay index, Hall Tideman index etc. For example, Brezina and associates (2012) estimated a concentration of banking services in Slovakia by HHI and CRn. Marinkovic (2012) measured the concentration of the market for banking services in Serbia by HHI index. Mijic and associates (2014) investigated the concentration of the market for audit services in the Republic of Serbia by HHI and CRn. Njegomir and Stojic (2010) considered a non-life insurance market concentration in former Yugoslavia by using HHI index.

Based on guidelines by the Organisation for Economic Co-operation and Development, the most relevant and the most common indices for measuring market concentration are HHI and CRn. Based on these indices and Gini coefficient, Kanyenga and Mangisoni (2006) analysed the concentration of the market for tobacco products in the Republic of Malawi for 1996-2006. U.S. Department of Justice and Federal Trade Commission in 1998 investigated the concentration of market for tobacco products in the United States by HHI. The conclusions were that the market was highly concentrated. The major position had a company Philip Morris Inc. with a market share of 47.80%. Chenqing and associates (2013) measured the market structure of tobacco industry of China for 2001-2011 by HHI index and CRn. The results showed that tobacco industry in China was in a high moderate oligopolistic market structure. Similarly, Kahyarara (2011) researched the level of concentration of the tobacco market in Tanzania. The results showed that the market was highly concentrated and that top three or top four firms produced more than 50 percent of total production in 2001-2007. The author also pointed out fluctuations in the level of concentration during the observed period. Mariniello and Antonielli (2014) measured in their study, concentration of manufacturing sectors from five major European economies (France, Germany, Italy, Spain and the United Kingdom) between 2000 and 2011 by HHI and CRn. The results showed that tobacco was one of the most concentrated sectors with the top four firms in production. Mirza (2014) estimated market concentration in manufacturing, financial and service sectors of Pakistan for 2011 and compared these results with previous years. HHI index and CR3 ratio had been

used to compute market concentration for every branch of industry, among which tobacco industry was.

Tobacco industry in Serbia is segmented into production of tobacco, processing tobacco and production of tobacco products. In accordance with privatization processes, there are four companies in production of tobacco products in the Republic of Serbia: Phillips Morris Operations AD Nis, British American Tobacco AD Vranje, Monus doo Belgrade, JT International AD Senta (Ministry of finance, 2014).

In the field of production of tobacco are presented companies Phillips Morris Operations AD Nis, Monus doo Belgrade, JT International AD Senta, but also the companies of domestic market (Ministry of finance, 2014). On this basis, the subject of research in following part of paper is the level of market share and position of leading and other companies of domestic market.

The study of market concentration for tobacco producers were conducted by HHI index and variables: operating revenue, net earnings, equity and number of employees. The research was conducted on the basis of financial statements of companies in the field of tobacco production in 2010-2013. Financial statements were publicly disclosed on the site of Serbian Business Registers Agency.

Methods for measurement of market concentration

Different statistical and econometric methods can be used for the measurement of market concentration. OECD (1993) recommends two methods: Herfindahl-Hirschman index (HHI) and the Concentration ratios (CRn).

Herfindahl-Hirschman Index (HHI) is a measure of the size of companies in relation to the industry and an indicator of the amount of competition among them. HHI is a convex function of the market share of companies in the sector (industry). It is defined as the sum of the squares of the market shares of all companies in the industry (U.S. Department of Justice and the Federal Trade Commission, 2010).

$$HHI = \sum_{i=1}^{n} S_i^2$$

Where:

S_i - the market share of the company in the market,
n - the number of companies.

HHI ranges from 1/N to one (Djolov, 2013). The maximum value of the HHI index of one indicates that the market is highly concentrated (monopolistic) and that entire market is supplied by one company. On the other hand, the minimum value of 1/N indicates that companies have equal market shares and the market is perfectly competitive. The level of market concentration measured by the HHI index could be explained by different scales.

U.S. Department of Justice and the Federal Trade Commission in the U.S. (2010) have defined the following scale of HHI index:

1. HHI index is below 0.01, the market is highly competitive,
2. HHI index is below 0.15, the market is not concentrated,
3. HHI index is between 0.15 to 0.25, the market is moderately concentrated,
4. HHI index is above 0.25, the market is highly concentrated.

According to another classification, provided by European Commission (2004), HHI index could be explained by different scale:

1. not concentrated markets: HHI is below 0.10,
2. moderately concentrated markets: HHI is between 0.10 to 0.20,
3. highly concentrated markets: HHI is above 0.20.

Concentration ratio (CRn) is the percentage of market share held by the largest companies in an industry (European Commission, 2004).

$$CR_n = \sum_{i=1}^{n} S_i$$

Where:

n - the number of leading companies,
S_i - the market share.

Concentration index indicates whether the industry is dominated by a few large companies or a number of smaller companies. Indices for measuring industrial concentration are commonly used for four or eight top companies. If the value of the index of industrial concentration is 100%, it is assumed that there is a pure monopoly or monopolistic position in terms of market share of observed companies. The value of the index of industrial concentration can be even greater if a small number of companies control the market. The market is categorized as oligopolistic and highly concentrated when the index value is greater than or equal to 75%.

Focusing only on four or eight, not three or six leading companies in the market, has an arbitrary character and can provide very limited information on actual market structure. Since the objective of this paper was to examine the market concentration for tobacco producers in Serbia, by the index of industrial concentration, we considered share of three leading companies in Serbian market of tobacco producers.

Characteristics of market for tobacco products in Serbia

In the Republic of Serbia, tobacco industry has been determined as production of tobacco, processing of tobacco and manufacturing of tobacco products (Ministry of finance, 2014). Manufacturing of tobacco products is categorized as processing of tobacco in order to obtain

final product. In accordance with the classification of activities of Institute of Statistics, manufacturing of tobacco products has been determined as:

1. Production of tobacco products and the replacement for tobacco: cigarettes, tobacco cigarette, cigar,
2. Pipe tobacco, chewing tobacco, snuff, etc.,
3. Production of homogenized or reconstituted tobacco (SORS, 2014).

The market for tobacco products in Serbia in the process of privatization had been characterized by certain changes. Tobacco Industry Nis was privatized by Philip Morris. Philip Morris took over the tobacco industry Nis, while British American Tobacco took over the tobacco industry Vranje. Strategic Partnership Tobacco Industry Nis and Philip Morris Holland BV worth 518 million EUR were most successful privatization in tobacco industry in Eastern Europe. In the privatization, Japan Tobacco International purchased tobacco industry Senta for 253 EUR per shares, which at that time was six times higher than its carrying values (Market Network, 2014).

Analysis of the results of market concentration in production of tobacco products in Serbia

The degree of concentration and the level of market share determine the nature of the market and competition, which can range from perfect competition to oligopoly. Low concentrations indicate perfect competition, i.e a market that is relatively equally divided between market participants. When the market is dominated by a small number of companies, the assumption is that the market is concentrated and oligopolistic. Nowadays, the market for production and processing of tobacco is highly oligopolistic and highly concentrated, which implies high barriers to entry and better market positioning of smaller companies in the market.

Market concentration of tobacco producers in Serbia was measured by HHI index and CRn index in 2010-2013. Analysis of the level of market concentration was based on the value of determined indicator by European Commission. Variable operating revenue was primarily used for measuring market concentration. In addition, we used variables: net earnings, equity and number of employees in order to analyse characteristics of the market for tobacco products.

The objective of the analysis is to answer the following questions:

1. If concentration is measured on the basis of value of operating revenue, can we conclude that the market for tobacco producers in the Republic of Serbia is oligopolistic?
2. Are there differences in conclusions about dominance in market when different independent variables are applied (net earnings, equity, number of employees)?
3. Does the dominance according to market share imply higher profitability?

The values of independent variables for measuring concentration are presented in the Table 1. The values of independent variables (operating revenue, net earnings, equity and number of employees) are presented for leading and other companies in this industry.

Table 1. Operating revenue, net earnings, equity and number of employees for leading companies and other companies in production of tobacco in Serbia (period of 2010-2013)

Independent Variables	Year			
	2010	2011	2012	2013
Operating Revenue				
Leading Companies	23.833.290	22.877.181	28.531.479	33.662.813
Other Companies	1.231.577	1.223.836	1.733.194	1.696.298
Total	25.064.867	24.101.017	30.264.673	35.359.111
Net Earnings				
Leading Companies	1.447.729	381.050	-757.205	2.756.239
Other Companies	73.581	88.278	165.477	173.166
Total	1.521.310	469.328	-591.728	2.929.405
Equity				
Leading Companies	17.541.272	16.210.535	18.208.022	19.470.630
Other Companies	540.103	616.839	923.265	975.092
Total	18.081.375	16.827.374	19.131.287	20.445.722
Number of Employees				
Leading Companies	965	869	902	912
Other Companies	170	152	157	150
Total	1.135	1.021	1.059	1.062

Source: Authors' calculation according to data from financial statements, Serbian Business Registers Agency (SBRA), http://www.apr.gov.rs

Note: Values are in thousands of RSD (except for number of employees)

The results of concentration in the market for tobacco producers in Serbia are presented in Table 2:

Table 2. Concentration in the market for tobacco producers in the Republic of Serbia

Market Concentration Indices	Independent variables			
	Operating Revenue	Net Earnings	Equity	Number of Employees
HHI 2010	0,50	-	0,50	0,50
HHI 2011	0,47	-	0,51	0,32
HHI 2012	0,45	-	0,56	0,27
HHI 2013	0,50	0,57	0,48	0,27
CR3 2010	95%	95%	97%	85%
CR3 2011	95%	81%	96%	85%
CR3 2012	94%	88%	95%	85%
CR3 2013	96%	94%	95%	86%

Source: Authors' calculation according to data from financial statements, Serbian Business Registers Agency (SBRA), http://www.apr.gov.rs

The results of measurement by HHI index and CR3 indicated that the market for tobacco producers in Republic of Serbia was highly concentrated and ranged from oligopoly to monopoly during 2010-2013. We concluded that the leading companies occupied 95% of the market for tobacco producers in the Republic of Serbia.

Analysing the market concentration for tobacco producers according to the value of net earnings, we confirmed previously conclusion about oligopolistic market and high industrial concentration. One of the leading companies was operating at a loss in 2010-2012, so the analysis of industrial concentration markets by HHI index did not make a sense in this period.

Operating loss of one of the leading companies may be result of transfer pricing, that are all selling different brands as a subsidiary of parent company abroad (Milačić et al., 2013). Results of measurement, based on value of equity in this period, also indicated a high concentration of the market. Leading companies had the highest value of equity in this branch of tobacco industry. There was a slight decrease in dynamics, which changed the market position of leading companies. From the point of value of total equity, market almost had monopoly characteristics in 2010. The growing interest of the market leaders and visibly weak competition lead to greater opportunities for monopolistic behavior and freedom in forming prices.

From the point of number of employees in companies of tobacco producers in Serbia, we also concluded that it was an oligopolistic market or market with a dominance of leading companies. HHI index was higher than 0.25 during observed period. Fluctuations in the value of concentration index and HHI index were the result of reducing the number of employees. The purpose for reduction was keeping competitiveness and sustainability of the business of leading companies in the Republic of Serbia.

Figure 1. CR4 index according to operating revenue, net earnings, equity and number of employees in 2010-2013.

Source: Authors' calculation according to data from financial statements, Serbian Business Registers Agency (SBRA), http://www.apr.gov.rs

Based on obtained results, we concluded that leading companies dominated in production of tobacco at Serbian market. There was a high degree of industrial concentration with elements of oligopoly. Does the dominance in terms of market share imply better performance of leading companies? We would try to answer this question in further consideration.

Analysis of business performance of companies in production of tobacco in the Republic of Serbia

In this part of paper, we researched whether the leading companies in production of tobacco in the Republic of Serbia would dominate in terms of earnings, structure of assets and financial performance. The research was based on financial reports of companies in production of tobacco in order to evaluate performance. The performance was evaluated on the basis of selected indicators of success, assets structure and financial performance (Palepu et al., 2012). There were displayed average values for these indicators of leading and other companies in production of tobacco.

By measuring performance and success of companies in production of tobacco, we obtained following results.

Table 3. Earnings ability of companies in production of tobacco in the Republic of Serbia

Indicators of Earnings Ability	Year		
	2011	2012	2013
Return on Equity (Operating Earnings/Average Equity)			
Leading Companies	5%	5%	5%
Other Companies	9%	9%	6%
Return on Shareholders' Equity (Net Earnings/Average Shareholder Equity)			
Leading Companies	11,21%	69,76%	40,24%
Other Companies	3.272,82%	8.019,85%	5.988,74%

Source: Authors' calculation according to data from financial statements, Serbian Business Registers Agency (SBRA), http://www.apr.gov.rs

According to the results, we concluded that there was negative correlation between market share and profitability of leading companies. So, the dominance in terms of market share did not imply a higher return on asset. So, the leading companies did not have the primacy in terms of value of return on invested assets. The rate of return of leading companies was less than rate of return of other companies in production of tobacco during observed period. The rate of return on asset of leading companies did not show significant fluctuations in dynamics. It was constant at 5%. Furthermore, the rate of return on asset of other companies was declined from 9% to 6% in 2013, which suggested that it reduced ability of other companies for achieving higher value of return on asset in production of tobacco.

The value of return on shareholder's equity also indicated that leading companies did not realize the primacy of the market of tobacco producers. The rate of return on shareholder's equity of leading companies was less than the rate of return on shareholder's equity of other companies in production of tobacco. We saw the same fluctuations of value in dynamics in both groups, i.e. an increase in rate on shareholder's return from 2011 to 2012, and then decline in 2013.

Analysis of structure of assets of company in producing tobacco in Serbia was carried out according to the value of turnover of current assets and assessment of the effectiveness of total assets of company. The rate of current assets measured on the basis of coefficient and number of days of single rate. Analysis the efficiency of assets was derived from the time necessary to repay invested funds in assets. The results were shown in Table 4.

Table 4. Indicators of assets structure of the company in tobacco production in the Republic of Serbia

Indicators of Assets Structure	Year		
	2011	2012	2013
Indicator of Turnover of Current Assets (Operating Revenue/Average Current Assets)			
Leading Companies	0,83	1,18	1,26
Other Companies	0,50	1,97	251,31
Number of Days of Turnover of Current Assets (365/Turnover of current assets)			
Leading Companies	440	309	289
Other Companies	731	185	1
Payoff of assets (Average Assets/Net Earnings+ Depreciation and Provisions)			

Indicators of Assets Structure	Year		
	2011	2012	2013
Leading Companies	108	89	154
Other Companies	21	35	33

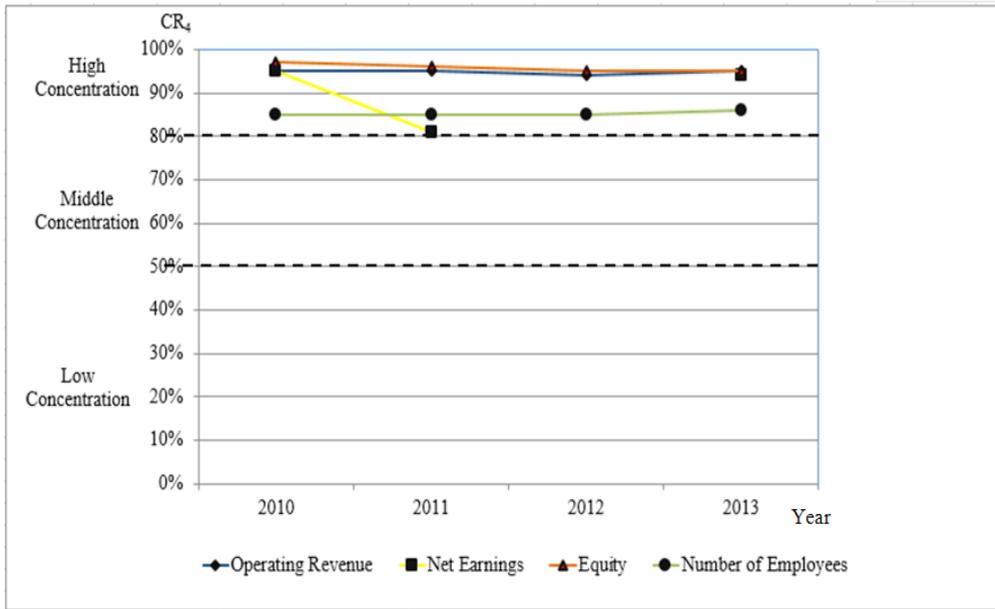*Source:* Authors' calculation according to data from financial statements, Serbian Business Registers Agency (SBRA), http://www.apr.gov.rs

According to the results, we concluded that leading companies had more effective turnover of current assets in 2011. It was necessary 291 days less for turnover of current assets. In remaining period, leading companies noted substantially lower efficiency of turnover of current assets. Other companies had a significant dominance in terms of turnover of current assets in 2013. This fact created preconditions for achieving higher value of operating revenues. On the other hand, higher efficiency of current assets created preconditions for lower costs of holding inventory and financing current assets. This fact also made a possibility of higher financial results of other companies.

Other companies in production of tobacco also noted better results in terms of number of years necessary for returning assets in cash. Leading companies had a higher payoff of assets, which had indicated a lower efficiency of total assets. It was noticeable the opposite tendencies in the values of indicators of studied groups. The highest efficiency of total assets of leading companies recorded in 2012. On the other hand, other companies achieved the lowest efficiency of total assets in 2012.

Analysis of financial performance of companies in production of tobacco in Serbia was conducted based on assessment of repaying debts, the level of funding from external sources and financing the liability with available assets. On this basis, we used the indicators of liquidity, indebtedness and solvency. The results of measurements were presented in Table 5.

Table 5. Indicators of financial performance of companies in production of tobacco in Republic of Serbia

Indicators of Financial Performance	Year			
	2010	2011	2012	2013
Current Liquidity (Current Assets/Short-Term Liabilities) Reference Value>2				
Leading Companies	1,21	1,22	1,49	1,25
Other Companies	1,19	1,03	1,57	2,46
Indebtedness (Liability/ Equity)				
Leading Companies	1,83	2,47	1,34	1,46
Other Companies	0,87	1,33	1,26	1,10
Solvency (Assets/Liability) Reference Value>1				
Leading Companies	1,77	1,77	2,37	1,91
Other Companies	1,24	0.96	1,71	3,03

Source: Authors' calculation according to data from financial statements, Serbian Business Registers Agency (SBRA), http://www.apr.gov.rs

According to the value of analysis of current liquidity ratio, we concluded that leading companies did not achieve to repay short-term obligations with available current assets during observed period. Only other companies in tobacco production were able to achieve current liquidity in 2013. Leading companies noted better results at the beginning of the observed period, i.e. in 2010 and 2011. After that, the primacy in terms of ability to repay short-term liabilities had other companies in production of tobacco.

Leading companies had a higher level of indebtedness during observed period. So, the measurement was following: 1 RSD equity for 1.83 RSD debt in 2010, 2.47 RSD debt in 2011, 1.34 RSD debt in 2012 and 1.46 RSD debt in 2013. On the other hand, 1 RSD equity of other companies for 0.87, 1.33, 1.26 and 1.10 RSD debt respectively. There was positive trend, because the level of indebtedness of other companies in tobacco production was reduced in 2011-2013.

According to the ratio of solvency of companies, we concluded that leading companies were able to repay debts with available assets during observed period. Solvency of leading companies was significantly better compared to solvency of other companies. Other companies in tobacco production noted a higher level of ability to repay debts at any period of time, even in the case of liquidation or bankruptcy.

Conclusion

Market concentration of tobacco producers in Serbia was measured based on HHI and CRn index. The result was that the market was oligopolistic. So, in the Republic of Serbia, as in most countries around the world, leading companies had a dominant market share, based on the value of operating revenue. The value of HHI index measured by the value of operating revenue was consistently above 0.20 in observed period. In addition, the value of concentration index indicated that almost two thirds, or 95% of annual value of operating revenue of the entire production of tobacco belonging to leading companies. Participation of other companies in this market was almost unnoticed.

Analysing market concentration according to the value of net earnings, equity and number of employees, we concluded that leading companies had a dominant position in distribution of net earnings, available equity and number of employees. It was obvious that the loss in business of leading companies had an impact on loss of entire sector. Present fluctuations in terms of number of employees were the result of efforts to be a competitive and sustain operations for leading companies in the Republic of Serbia.

In the last part of analysis of performance of business companies in production of tobacco, we examined whether dominance in terms of market share would result in better performance. The study results pointed lower success of leading companies. Leading companies had a dominant market share, but they realized lower return on engaged resources and institutional investments.

Analysis of assets structure pointed to weaker efficiency of turnover of current assets and longer time required that the funds invested in total assets return in form of cash. On this basis,

conclusions were that the financial performances of other companies in producing tobacco were significantly better compared to the financial performance of leading companies. In addition, leading companies had a higher level of indebtedness, based on equity and debts ratio in reporting period. Leading companies had primacy only in terms of ability to repay the total debts from the assets on longer time prospects.

Summarizing obtained results of research, we concluded that there was a negative correlation between market share and performance indicators of leading companies in the field of tobacco production in the Republic of Serbia. So, leading companies had a dominant position in market of Serbia, but also weaker operating results in terms of effectiveness, assets structure and financial performance in observed period. It was evident that leading companies motivated by profit as the ultimate goal of business, decided to take advantage of domestic market in terms of cheaper inputs and lower tax in production of tobacco. In addition, the price for tobacco in the domestic market was considerably higher compared to other countries in the region. Leading companies were motivated to place tobacco in many factories around the world, where the price for tobacco products was several times higher.

Literature

1. Brezina, I., Pekar, J., Čičkova, Z. (2012): *The Analysis of Concentration of Slovak Banking Sector*, Proceedings of the Conference Strategic Management - Strategic Management and Overcoming the Economic and Financial Crisis, Subotica, Serbia, pp. 1-8.

2. Chenqing, S., Jialong, X., Xiaqxuan, Y. (2013): *On the Study of Structure Optimization of Tobacco Industry in China*, Proceedings of International Conference on Industrial Engineering and Management Science, DEStech Publications, Shanghai, China, pp. 667-674, available at: http://books.google.rs/books?id=ZTnFAQAAQBAJ&pg=PA667&lpg=PA667&dq=On+the+Study+of+Structure+Optimization+of+Tobacco+Industry+in+China&source=bl&ots=qw4PEIJ3cL&sig=aGv4JYK_8TGT0NEranuvfCvAtAA&hl=sr&sa=X&ei=oUBNVKTTLKXnygOzo4DoBA&ved=0CCUQ6AEwAA#v=onepage&q=On%20the%20Study%20of%20Structure%20Optimization%20of%20Tobacco%20Industry%20in%20China&f=false

3. Djolov, G. (2013): *The Herfindahl-Hirschman Index as a Decision Guide to Business Concentration: A Statistical Exploration*, Journal of Economic & Social Measurement, pp. 201-227, Amsterdam, Netherlands, available at: http://iospress.metapress.com/content/d753vm64lw242686

4. European Commission. (2004): *Guidelines on the Assessment of Horizontal Mergers*, Official Journal of European Union, pp. 5-18, Brussels, Belgium, available at: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52004XC0205%2802%29&from=EN

5. Kahyarara, G. (2011): *Market Competition and Performance of Tanzanian Manufacturing*, Proceedings of CSAE 25th Anniversary Conference 2011 - Economic Development in Africa CSAE, Oxford, United Kingdom, pp. 1-24, available at: www.

csae.ox.ac.uk/conferences/2011-edia/papers/488-Kahyarara.pdf

6. Kanyenga, M., Mangisoni, J. H. (2006): *Assessing Market Concentration in the Tobacco Industry of Malawi*, University of Malawi, Lilongwe, Malawi, available at: http://community.eldis.org/.59ee3fb9/Assessing%20market%20concentration%20in%20the%20tobacco%20industry%20of%20malawi.pdf

7. Mariniello, M., Antonielli, M. (2014): *Antitrust Risk in EU Manufacturing: A Sector-Level Ranking*, Bruegel Working Paper 7/2014, European Commission, Brussels, Belgium, available at: www.bruegel.org/publications/publication-detail/publication/836-antitrust-risk-in-eu-manufacturing-a-sector-level-ranking/

8. Marinković, M. (2012): *Nivo koncentracije u bankarskom sektoru Srbije*, Makroekonomske analize i trendovi, no. 217, pp. 39-41, Ekonomski institut, Beograd, Srbija.

9. Market Network (2014): *Tržište cigareta u Srbiji,* Bnetwork, Belgrade, Serbia, retrieved at: 15.08.2014, available at: http://marketnetwork.rs/retail/analiza/2064-trziste-cigareta-u-srbiji

10. Mijić, K., Vuković, B., Jakšić, D. (2014): *Koncentracija tržišta revizijskih usluga u Republici Srbiji*, Ekonomske teme, vol. 52, no. 1, pp.117-130, Ekonomski fakultet, Niš, Srbija.

11. Milačić, S., Đukić, T., Pavlović, M. (2013): *Analiza tokova gotovine preduzeća duvanske industrije u Republici Srbiji,* Ekonomski pogledi, no. 3, pp. 1-20, Ekonomski fakultet, Kosovska Mitrovica, Srbija.

12. Ministry of Finance (2014): *Arhiva-Analize i izveštaji,* MoF, Belgrade, Serbia, retrieved at: 10.08.2014, available at: http://duvan.gov.rs/arhiva/analize

13. Mirza, A. B. (2014): *Market Concentration in Manufacturing, Financial and Service Sectors in Pakistan,* Pakistan Business Review, vol. 5, no. 4, pp. 563-578, Institute of Business Management, Karachi, Pakistan, available at: www.iobm.edu.pk/PBR/PBR_1401_V15N4/PBR_V15N4.pdf

14. Njegomir, V., Stojic, D. (2010): *Determinants of Insurance Market Attractiveness for Foreign Investments: The Case of Ex-Yugoslavia*, Economic Research, no. 23, pp. 99-110, Faculty of Economics, Pula, Croatia.

15. Organisation for Economic Co-operation and Development (OECD), (1993): *Glossary of Industrial Organization Economics and Competition Law*, OECD, Brussels, Belgium, available at: www.oecd.org/regreform/sectors/2376087.pdf

16. Palepu, K., Healy, P., Bernard, V. (2012): *Business Analysis & Valuation-Using Financial Statements*, Cengage Learning, London, United Kingdom.

17. Serbian Business Registers Agency (SBRA), (2014): *Registar finansijskih izveštaja,* Belgrade, Serbia, retrieved at: 11.08.2014, available at: www.apr.gov.rs

18. Statistical Office of Republic of Serbia (SORS), (2014): *Klasifikacija,* Belgrade, Serbia, retrieved at: 10.08.2014, available at: webrzs.stat.gov.rs/WebSite/userFiles/file/.../Klasifikacija.pdf

19. U.S Department of Justice and the Federal Trade Commission (1998): *Multinationalmonitor,* Department of Justice and the Federal Trade Commission, Washington, United States, available at: www.multinationalmonitor.org/mm1998/111998/taub.html

20. U.S. Department of Justice and the Federal Trade Commission (2010): *Horizontal Merger Guidelines,* United States: Department of Justice and the Federal Trade Commission, Washington, US.

KONCENTRACIJA TRŽIŠTA PROIZVOĐAČA DUVANA U REPUBLICI SRBIJI

Bojana Vuković[4], Kristina Mijić[5], Nataša Spahić[6]

Rezime

U radu je sprovedeno istraživanje i analiza koncentracije na tržištu proizvođača duvana u Republici Srbiji u vremenskom periodu 2010-2013. godina. Koncentracija na tržištu proizvodnje duvana merena je Herfindahl Hirschman indeksom (HHI) i Indeksom koncentracije (CRn) na bazi nezavisnih varijabli: poslovni prihod, neto rezultat, kapital i broj zaposlenih. Rezultati istraživanja koncentracije tržišta proizvođača duvana pokazali su da je tržište u Republici Srbiji visoko koncentrisano i da ima karakteristike oligopola. Analizirajući koncentraciju tržišta prema visini neto rezultata, ukupnog kapitala i broja zaposlenih izveo se zaključak da "vodeće kompanije" zauzimaju dominantno mesto u raspodeli neto rezultata, raspolaganju kapitalom i zapošljavanju kadrova. Primetno je da ostvareni gubitak u poslovanju vodećih kompanija utiče na gubitak kompletnog sektora. Međutim, dominantno tržišno učešće vodećih kompanija ne implicira bolje performanse poslovanja. Bez obzira što su dominantne na tržištu Srbije, „vodeće kompanije" beleže slabije rezultate poslovanja sa aspekta uspešnosti, imovinske strukture i finansijskih sposobnosti u posmatranom periodu. Dakle, dobijeni rezultati istraživanja ukazali su na negativnu korelaciju sa aspekta visine tržišnog učešća i ostvarenih pokazatelja poslovanja „vodećih kompanija" proizvodnje duvana, što nameće pitanja motiva poslovanja „vodećih kompanija" na tržištu Republike Srbije.

Ključne reči: *proizvođači duvana, koncentracija tržišta, Srbija*

4   Dr Bojana Vuković, doktor ekonomskih nauka, asistent, Ekonomski fakultet, Segedinski put 9-11, 24000 Subotica, Srbija, Telefon: +381 24 628 000, E-mail: bojanavuk@ef.uns.ac.rs

5   Dr Kristina Mijić, doktor ekonomskih nauka, asistent, Ekonomski fakultet, Segedinski put 9-11, 24000 Subotica, Srbija, Telefon: +381 24 628 000, E-mail: mijick@ef.uns.ac.rs

6   Doc. dr Nataša Spahić, doktor ekonomskih nauka, Prirodno-matematički fakultet, Trg Dositeja Obradovića 3, 21000 Novi Sad, Srbija, Telefon: +381 21 485 28 64, E-mail: natasa.spahic@dmi.uns.ac.rs

CAN HUMAN RESOURCES INDUCE SUSTAINABILITY IN BUSINESS? MODELING, TESTING AND CORRELATING HR INDEX AND COMPANY'S BUSINESS RESULTS[1]

Jovan Zubović[2], Marko Jeločnik[3], Jonel Subić[4]

Abstract

In this paper the authors analyze the impact of the composite human resource index on sustainable growth in a specific business sector in a transition country. Sustainability of country's economy is growingly relying on the knowledge economy which has been implemented in strategies of sustainable development throughout Europe. The knowledge economy is mostly based on human resources and the way they are organized and managed in the companies actively operating in competitive markets. In order to confirm importance of the human resources (HR) index, results were tested by means of modeling, measuring and correlating the HR index with business results at micro level. The tests were conducted on the data from the survey in Serbian meat processing industry. The results were then compared with the results from the survey conducted in a financial industry. Moreover, a model was made that could be applicable in all countries that do not have available official statistic data on the level of investments in human resources. The focus was on determining the correlation direction, and hence creating a research model applicable in all business sectors. It has been found that a significant one-way correlation exists between business performance and increased HR index. In that way it has been confirmed that in Serbian economy that has recorded global decrease during transition, certain business sectors, and especially companies with high levels of investments in improving its HR index record above average and sustainable growth.

Key words: *Investments, HR index, Correlation, Modeling.*

JEL: *Q13, M54*

---

2   Jovan Zubović, Ph.D., Research Associate, Institute of Economic Sciences, Zmaj Jovina Street no. 12, 11000 Belgrade, Serbia, Phone: +381 11 26 23 055, E-mail: jovan.zubovic@ien.bg.ac.rs

3   Marko Jeločnik, M.A., Research Assistant, Institute of Agricultural Economics, Volgina Street no. 15, 11060 Belgrade, Serbia, Phone: 381 11 69 72 852, E-mail: marko_j@iep.bg.ac.rs

4   Jonel Subić, Ph.D., Senior Research Associate, Institute of Agricultural Economics, Volgina Street no. 15, 11060 Belgrade, Serbia, Phone: 381 11 69 72 858, E-mail:, jonel_s@iep.bg.ac.rs

Introduction

Importance of human resources has been changing significantly through history. Sustainable economic growth was initially based on the dominant role of natural factors and physical labor. During the industrial expansion, the most important factors of production were real and financial capital. Due to the technological developments achieved in the twentieth century the so called "weightless economy" became dominant factor for generating value added. Growth in importance of such an economy today is not visible only in the service sector. Modern agriculture and industry increasingly depend on knowledge and skills. Technological development has made manual labor, material capital, as well as natural and financial resources gradually lose on their importance. In a society where the economy is based on knowledge as a backbone of comparative advantage, a key factor of the production is a group of intangible factors. They include knowledge, skills and work culture, which are gaining greater market value over time (Zubovic et al., 2008). Growing impact of knowledge-based economy during last two decades has significantly fostered the importance of human resources, both on micro and macro level. According to Awang et al. (2010) "the competitiveness of nation and companies in the knowledge-based economy today lies more on their knowledge and intellectual capital than on other resources".

The concept of sustainable development based on new growth theory which relies on the applied knowledge originates from the nineties of the 20th century. According to that concept the knowledge can be more or less economically efficient. In the knowledge based economy, textbook knowledge the is not the basis of success, but the ability to solve problems, to generate and implement innovation and to cooperate with others. The knowledge economy became a popular topic for research worldwide. Several studies indicate its significance and serve as a basis for providing national strategies for promotion of sustainable growth. The knowledge economy has proven to be the basis for sustainable development of European Union since the Lisbon Agenda. In the knowledge based economies human resources are viewed as one of the generators of success on both micro and macro level. (De la Fuente, Ciccone, 2002).

In this paper we are striving to expand and extend research on this issue by introducing new element in the research – analysis of HR practices impact on business results by industry sectors. Empirically we focus on meat processing industry in which we expect to confirm that higher levels of HR practices measured by HR index result in improved business indicators achieved in the following years. By means of an analysis in the meat processing industry in Serbia, the research focused on evaluation of relations between (positive) business results and investments in human resources. In the second part we give review of some theoretical arguments regarding the paper hypothesis. The third part presents the facts about the sustainability of Serbian industry in general. The fourth part of the paper presents the methodology used, while in the fifth part we deliver the results and discussion of the results from the empirical survey. The paper closes with the conclusion on the results achieved.

Theoretical Background

According to Stacey (2001) human capital and intangible assets create intellectual capital. Both can be measured by valid quantitative methods. In such a way we can derive an index of intellectual capital, which includes not only the number of hours spent in training, or the number of patents made, but the extent of such utilization capacity of the company in the business process. This approach allows the computation of accurate indicators of potential business growth in the future.

As noted above, in accordance with De la Fuente and Ciccone (2002) human resources and human capital are viewed as the core generators of success both on micro and macro level in the knowledge based economies. The concept of Human Capital Index has been applied on macro level in the case of Pakistan, Bulgaria and Colombia in order to confirm importance of human resources in developing economies (Mubarik et al., 2014; Ene, 2012; Montoya, 2013).

Some authors have confirmed relationship between specific elements of HR practices with positive business results, for example in Darwish et al. (2013) where the authors found that training have strong positive impact on assets and return on equity.

Focusing on the micro level, one of the first models named the "Human Capital Index - HCI" was created by Watson Wyatt Worldwide Research (2012). The HCI has emerged as a result of the research practices of human resources in 750 organizations in the USA and Europe. In the analysis, Watson Wyatt Worldwide Research allocated 47% of the market value growth in analyzed companies to intangible components of human resources which include system of rewards and responsibilities, collegial and flexible workplace, excellent policy of recruitment and retention, integrity of communications and focused HR technology. The study shows that firms with low level of HCI have achieved an average 21% return on investment, firms with an average HCI have made 39% return, while firms with a high HCI achieved 64% on return.

Growing number of companies are aware that their sustainable growth in the competitive market is closely related to the level of human capital of their employees. What is paradoxical is that while the organizations are aware of the importance of human resources, corporate investments in human resources (such as basic skills, quality of training and lifelong education) are rarely evaluated since they are not familiar with the benefit of such investments. That is especially the case in some developing countries of Eastern Europe and Russia, where the roots of the planned economy and Soviet-era heritage in human resource management are still influential (Denisova Schmidt, 2011). It is common for accounting/finance departments in organizations to thoroughly monitor and evaluate investment in assets, research & development, while investment in human resources is rarely found in the financial statements. No matter how good the external environment is, according to Done and Domazet (2011) it is very important to focus on people with their knowledge and skills.

Several studies (Bassi, McMurrrer, 2007; Dearden et al., 2002; Greer, 2006; Hanson et al., 2004; Chasovskaya, 2010; Tkachenko, Ardichvili, 2013; Birch et al., 2010; Zubović,

Domazet, 2013) have shown that strategically planned investments in human capital continuously create higher skilled, more innovative, productive and loyal employees, hence providing the organization with a sustainable competitive advantage over their less progressive competitors. Investments in human capital generate both short term and long term benefits that will provide more skilled and productive employees, as well as improve their loyalty and ethics. For example according to Chasovskaya (2010), the loyalty of employees is one of the most important factors that improve company's efficiency, since such employees produce goods of better quality, learn new technologies quicker, and are more tolerant to changes. Tkachenko and Ardichvili (2013) suggest that training can yield to both individual- and organizational-level benefits and generate substantial gains in productivity, profitability, and stock performance. Both loyalty and training of an employee are responsibility of HR departments which are a component of HR index, explained later in the text. Greer (2006) emphasizes that human resources should be viewed as an investment perspective. According to Bassi and McMurrer (1999), business environment with no sufficient information in the investments in human capital and not adequately evaluated leads to at least three outcomes: some of the investments in human resources are ineffective; it is difficult to distinguish good from poor investments; due to inability to evaluate the effects of investments in human resources financial markets neglect the importance of such investments. At the micro level some studies have evaluated the effectiveness of human capital investments in a specific company in order to confirm its feasibility (Kwon, Rupp, 2013).

Information on the investments in human resources is often not available; therefore it is difficult to evaluate their effectiveness. That makes investors resistant to appreciate such investments, even if they are profitable, especially in the long run. Despite such resistance, application of improved scientific methodology in this field in recent decades has brought some positive impact. Findings in this paper will certainly be added to knowledge database which should lead to higher appreciation of investments in HR.

Due to a fact that data about the level of investment in human resources and the quality of HR departments in companies operating in Serbia is not available, the aim of this paper is to provide alternative method of obtaining such information. It includes comparison of the results and correlation tests among individual variables composing the Index of Human Resources (HR Index). For that purpose there has been used a questionnaire to generate nine variables that are correlated with company business results (such as change in assets value, profitability, ROA and changes in employment). Such an approach provides more in-depth results than the research conducted by Cranet (2008). Novelty is based on an assumption that the effectiveness of investments in development of human capital differs among business sectors in the one country's economy. To a certain extent Theriou and Chatzoglou (2014) have disaggregated economy by applying three sectors' division and identified that manufacturing firms with good HR practices tend to achieve higher performance indicators. Similarly Katou and Budgwar (2012) have conducted a research in service sector companies and proved that companies pursuing improved HR practices achieve superior organization performance. In our paper the results achieved from the meat processing industry are compared with the survey conducted in the financial sector (Zubović

et al., 2011), which opened the way for continued research in other sectors that needs to be pursued in the future. However it was necessary to conduct a research in a more labour oriented industry, in order to test the assumption that there is significant difference in HR Index among different sectors.

Legal and Empirical facts on Sustainability of Serbian Economy

Despite the fact that transition in Serbia was officially initiated in 2000, only in 2007 there was adopted the final version of the National Strategy for Sustainable Development for the period 2008-2017 (Government of Serbia, 2008). The strategy, among others, comprises the analysis of the strengths and opportunities on the one hand and weaknesses and threats on the other hand for sustainable development of Serbian economy until year 2017. It further states that sustainable economic development should enable continuous long term growth that will be based primarily on knowledge, information, people, education and the quality of the relationship between people and institutions rather than on the excessive use of natural resources. Apparently such an economy requires high levels of human capital, human resources and their organization in the companies (Government of Serbia, 2008). Achieving sustainable development in Serbia will be based on adaptation and application of the principles prevailing in the European Union, which rely on increased competitiveness based on knowledge, innovation and entrepreneurship.

Among the Strategy's advantages there have been noted skilled labor force and the growth of the private sector. Weaknesses that are observed are related to slow privatization process, insufficient Greenfield investments, continued brain-drain, very low share of expenditure on education and science, and adverse socio-economic situation of young people. The opportunities that are observed in the Strategy include, among others: the completion of the privatization process, growing reliance on knowledge based economy and increasing public-private partnerships, while threats to successful sustainable development are the rise of unemployment, poverty, debt and slow economic growth, unfavorable demographic trends, and the possible absence of political will to implement legal reforms. Having a look on the Strategy from the perspective of nearly ten years one can observe that mostly all elements of the SWOT have been properly detected. Strengths shown in the form of skilled labour force accompanied with growing importance of knowledge based economy have proved to be successful factors needed for sustainable growth. According to Nikolić and Zubović (2013) as a result of harsh structural changes in transition period there have been recorded poor economic results in Serbian economy at the global level. However, in 2012 meat processing industry recorded above average results and achieved 17% growth as compared to 2000.

Serbian economy currently functions on the basis of generally unfavorable economic structure, given the natural and financial resources, technology and labour. All of these resources are relatively scarce. The limitation partly stems from the relatively weak natural, technological and financial basis. Serbia with less than eight million people and a gross domestic product of just above € 30 billion does not represent a significant

market with large economic potential, observed on global or European level. Despite such poor data from the general environment, the use of appropriate development strategies could significantly improve relatively poor position compared to the reference countries in transition, especially those from Southeastern Europe. The progress in the next phase of development of the Serbian society, state and economy must not be short termed and unpredictable. It is necessary to provide conditions for the sustainable development of the economy based on knowledge which will lead to an increase in the group of key economic indicators such as GDP growth, employment, foreign trade, competitiveness, exports, investment and standards of the population. Subić and associates (2013) confirmed that Serbian agro-food industry achieved sustainable growth and that market economy and market principles certainly had an impact on that sector. For this reason, in this paper, the authors have attempted to generate so-called HR Index (HRI), which should simplify the evaluation of all these elements and confirm their impact on the sustainable growth of companies operating in the meat processing sector that is a significant component of the agro-food industry.

Methodology

In order to confirm the objective of the paper the research has been conducted in the Serbian meat processing industry. The methodology used in this study is an improvement of Zubović et al. (2011), Cranet (2008) and Watson Wyatt Worldwide Research (2012) models. Watson Wyatt Worldwide Research model examines relationship between the effective use of organization's human capital and the creation of higher returns. Cranet (2008) gives metadata on research conducted in 39 countries using the standardized questionnaire. Results obtained from the survey are used for comparison of data from a sample with the average of all companies operating in the same economic sector. Comparisons are made on productivity, level of innovation, quality of service, profitability and stock prices in the stock market.

Some authors (for example Griliches, 1997) present research and detailed methodology of meta-data on 6.685 companies from 26 countries. However these researches have been conducted on the sample of all companies in the target country regardless of the business sector. In this paper we assume that HR index and correlations significantly differ among business sectors, hence resulting in the need to divide research results by business sectors. Zubović et al. (2011) have tested two-way correlations between HR Index and company business results in the financial sector. Meat processing industry is a reliable business sector for comparison with the financial sector for some similarities and differences among them. As the most important similarity we want to emphasize the fact that small number of companies in both sectors has a relatively significant share in total value of assets. Among the differences, the following could be underlined as the most important: technical and technological practices conducted on daily basis in business activities, having in mind that one sector is labour-oriented and other is service-oriented; structure of employees according to level of education, required abilities and skills (higher level of education is more presented in financial sector); share of foreign capital in the sectors is significantly higher in financial

sector. Hence comparison of results in financial sector with those obtained in this paper would certainly bring about important implications.

A survey containing 24 questions, divided into nine groups of questions was used to generate HR Index. Scores obtained in nine groups will be used as nine observed variables (Variables) in econometric testing. Results from the competed questionnaires were coded in the following way:

- Total of 24 questions are grouped in nine groups of questions to compose nine variables (column 1, Table 1);
- Responses to each question are assigned maximum values of 0.5, 1 or 2, depending on the importance of the question;
- Different number of questions is assigned to 9 variables (columns 2-4, Table 1). The total of ten questions are assigned maximum value 0.5; thirteen questions maximum value 1 and one question maximum value of 2 points. This distribution is an adjustment made to Cranet (2008) which used 55 questions, and Zubovic et al. (2011) which used the same number of questions related to HR practices but included some other related to general business.
- Variable's maximum values range between 1 and 5. Variable's maximum value is shown in column 5, Table 1 (Letter C represents Column);
- Nine variables are used to compose a HR index (last row, Table 1). HR Index represents the sum of individual values of the variables, thus its value can range between 0 and 20.

Table 1. Distribution and values of observed variables composing the HR Index

Observed variables	Number of questions composing a variable			Maximum value (C2*0.5+C3*1+C4*2)
	0.5 points (C2)	1 point (C3)	2 points (C4)	
1. Company size	0	1	0	1
2. Training policy	0	4	0	4
3. Evaluation of training needs	0	3	0	3
4. Quality of HR department	8	1	0	5
5. Internal recruiting policy	0	0	1	2
6. Employees age	0	1	0	1
7. Role and strength of unions	2	1	0	2
8. Participation of manual labour	0	1	0	1
9. Participation of graduated labour	0	1	0	1
Total HR Index	**10**	**13**	**1**	**20**

Source: Zubović et al., 2012.

The research population used in this paper represents all companies belonging to Meat processing industry (MPI) in Serbia. A survey on a sample of companies belonging to the population in year 2010 has been conducted for composing the HR Index. The same sample was used in correlation testing of variables and Crombach's alpha test. Further on, the business results of sampled companies for the period 2009-2011 have been used

for final correlation purposes.

A survey in the form of the questionnaire was completed by ten enterprises belonging to the population. Randomness of the sample was achieved by distributing the questionnaires to all 54 companies that belong to large/medium companies according to their number of employees, as well as to 50 (out of total 372) small companies. Questionnaires were completed by eight large/medium and two small companies. Despite the small response rate, the size of the sample is satisfactory because according to official statistical data the sample covers over 15% of the total population by three indicators (number of employees, assets values and turnover). The value of assets of the sampled companies create around 21% share of total assets of the population in 2010, over 23% of total turnover and employ 20% of all labour force (see Table 2). Moreover, we have to note that nearly 90% of companies in population belong to category of small companies which according to official statistical data generate less than 10% in total employment and assets values. Data gathered from the survey was accompanied with official financial statements obtained from the Serbian Business Registers Agency.

Data collected from the survey were used for correlation tests in order to confirm existence of correlation between HR index and its components with business results. Correlation was tested using Pearson correlation and Spearman's correlation coefficient (SCC), indicating the degree of variability in quantitative relations of two random variables. Correlation coefficients were calculated using a standard software package for statistical analysis of SPSS data for two different correlations test. Spearman coefficient is more applicable in the absence of normal distribution of data and a small sample size of less than 30, so we will predominantly focus on these results. Even though Pearson coefficient might not be appropriate for tests on small sample, we have included it in order to verify the quality of the results. Since the results in both tests showed nearly the same values we recommend for any future analysis not to use both tests, but to rely solely on SCC. Finally the regression analysis has been introduced with a goal to confirm the achieved results.

Results and Discussion

HR Index

According to data shown in Annex (Table 12), companies from this sector participated in 2010 with 6.4% in total Agriculture and Agro-food industry, employing around 11.5% of total workers and generating around 7.6% of total turnover within total agriculture and agro-food industry (see Figures 1-3).

Figure 1. Number of companies in agriculture and agro-food industry in Serbia (2009/2010)
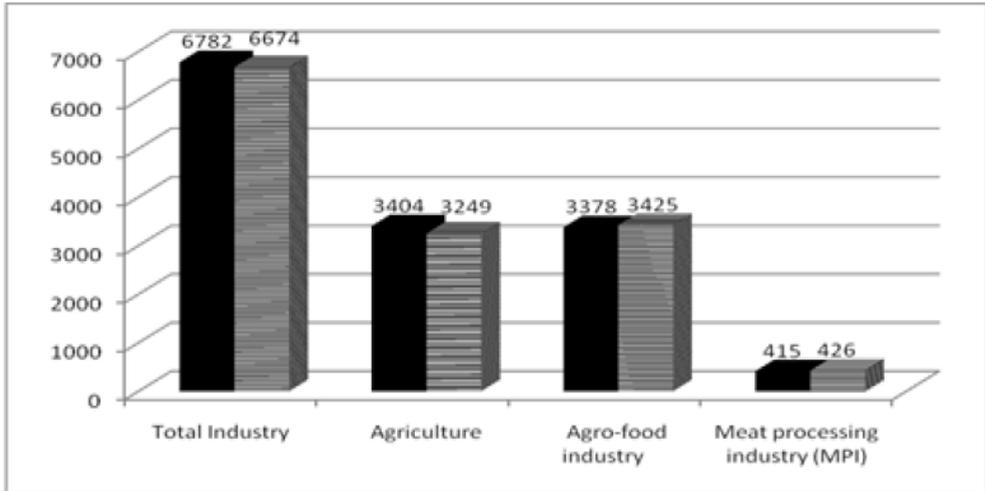
Source: SBRS, 2012.

Note: Black bars represent year 2009.

Figure 2. Number of employees in agriculture and agro-food industry in Serbia (2009/2010)
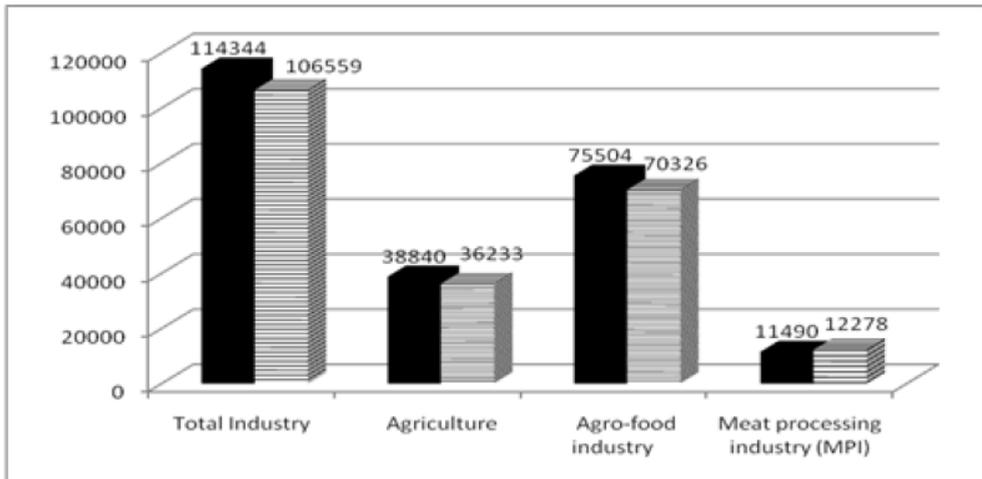
Source: SBRS, 2012.

Note: Black bars represent year 2009.

Figure 3. Turnover in agriculture and agro-food industry in Serbia (2009/2010) (in € mil.)
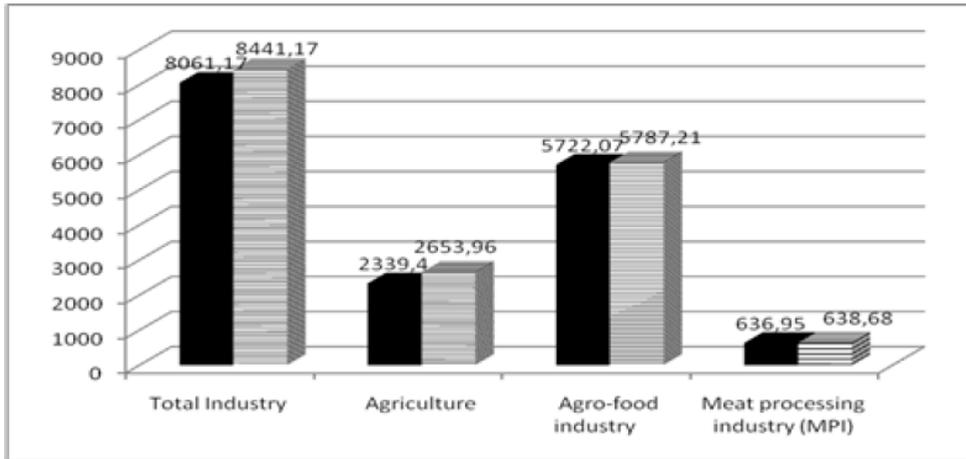
Source: SBRS, 2012.

Note: Black bars represent year 2009.

Using the model of HR Index presented in Table 1, HR Indices have been calculated for sampled companies (Table 2). Bottom row in Table 2 shows data from the research conducted by Zubović et al. (2011) in Serbian financial industry. Therefore we are able to compare results in two different industries in Serbia in the same points of time (last 2 rows, Table 2).

Table 2. Survey results and values of HR Indices

Variable	1. Firm size	2. Training policy	3. Training needs	4. Quality of HR Dept.	5. Recru- iting	6. Age	7. Unions	8. Manual labour	9.Gradu- ated	10. HR Index
max score Firm	1	4	3	5	2	1	2	1	1	20
A	0,8	0	0	0	2	0.8	0	0.2	0.1	3.9
B	1	2.9	3	4.3	2	0.5	1	0.7	0.1	15.5
C	1	1.1	0.5	1	0	0.7	1.2	0.2	0.1	5.8
D	0.8	0.2	0	0.3	0.2	1	0	0.2	0.1	2.8
E	0.2	2.5	2.8	4.5	2	0.8	1.3	0.2	0.1	14.4
F	0.8	1	0.3	0	0.5	0.9	0.3	0.4	0.2	4.4
G	0.5	1.4	0	2.2	2	0.4	1.2	0.3	0.1	8.1
H	1	0.7	1	1.1	1	0.5	1	0.3	0.1	6.7
I	1	1.2	2	3.5	0.2	0.6	1.6	0.2	0.2	10.5
J	0.2	0.6	0.7	1.9	0	0.5	0.3	0.2	0.2	4.6
Average	**0.7**	**1.2**	**1.0**	**1.9**	**1.0**	**0.7**	**0.8**	**0.3**	**0.1**	**7.7**
FIN*	**0.9**	**2.6**	**1.7**	**3.2**	**1.5**	**0.8**	**0.7**	**0.9**	**0.4**	**12.6**
* Data gathered from Zubovic et al. (2011)										

Source: Authors calculation according to Zubović et al., 2011; Zubović et al., 2012.

Column 1 shows the results related to company size. Column 2 contains scores related to HR procedures in the company (named Training policy) – existence of normative acts for relationship with employees; amounts invested in training and development; time spent for training and the process of career development. Column 3 lists the results from the set of questions analyzing the quality of the system for proper definition of training needs. The fourth column indicates the highest number of index points, and it is linked to the quality of human resources department in the company. There are major differences among companies that will significantly affect the subsequent correlation analysis. In the following column the questions regarding internal recruitment in the company are grouped. Column 6 shows the percentage of employees younger than 45 years of age. Questions related to labor unions are shown in column 7. The variable represented as manual workers in column 8, in fact, shows the percentage of employees who work as manual labour. The last column shows the synthesized HR index.

Values of HR Index range between 2.9 and 15.5 points, with an average score of 7.7 points (out of maximum 20 points). This range of HR index values, with large variations, provides good basis for application of Spearman correlation coefficients, as it will be discussed later.

The last two rows in Table 2 indicate average results of the surveys conducted in two different business sectors, namely meat processing industry and financial sector. As one of the purposes of this study was to show a significant difference in HR Index among different sectors, the results show that financial sector achieved has much higher scores in all groups of questions, except for unions. Therefore, our hypothesis that research needs to be conducted independently in different business sectors is proven.

Index Correlation Testing

The survey results are used in correlation tests. In the first test we have used both Pearson and Spearman coefficients. The goal of the first test is to verify that there is no full correlation among variables. In that way it can be assured that results obtained could be used in regression analysis that can be conducted in the future after completion of research in several business sectors. A test on correlation was conducted between nine variables used to create HR Index (Table 3). We have set the hypotheses as follows:

The *Null hypothesis H_0* is: There is no full correlation between any of the variables which comprise the HR Index.

The *Alterative hypothesis H_1* is: There is a full correlation between some of the variables which comprise the HR Index.

Table 3. Correlation between nine variables which create the HR Index

Variable		Training policy	Training needs	Quality of HR Dept.	Recruiting	Age	Unions	Manual labour	Graduated
Company size	PC[1]	-,108	-,024	-,244	-,177	,050	,115	,333	-,137
	Sig. (2-tailed)	,766	,948	,497	,624	,890	,752	,347	,707
	SCC[2]	,114	,270	-,083	-,149	-,087	,174	,270	-,120
	Sig. (2-tailed)	,753	,450	,820	,682	,811	,631	,451	,742
Training policy	PC		,843**	,860**	,472	-,313	,635*	,614	-,169
	Sig. (2-tailed)		,002	,001	,168	,379	,049	,059	,641
	SCC		,644*	,809**	,371	-,400	,773**	,418	-,114
	Sig. (2-tailed)		,044	,005	,291	,252	,009	,229	,754
Training needs	PC			,900**	,310	-,235	,592	,441	-,018
	Sig. (2-tailed)			,000	,384	,513	,071	,202	,961
	SCC			,757*	,083	-,287	,565	,180	,115
	Sig. (2-tailed)			,011	,820	,422	,089	,618	,751
Quality of HR department	PC				,372	-,443	,712*	,321	-,032
	Sig. (2-tailed)				,289	,200	,021	,367	,930
	SCC				,281	-,515	,738*	,065	-,076
	Sig. (2-tailed)				,432	,127	,015	,858	,834
Recruiting	PC					-,220	,135	,388	-,571
	Sig. (2-tailed)					,541	,710	,268	,085
	SCC					-,153	,057	,438	-,513
	Sig. (2-tailed)					,672	,875	,206	,130
Age	PC						-,525	-,289	-,011
	Sig. (2-tailed)						,119	,419	,975
	SCC						-,389	-,348	,039
	Sig. (2-tailed)						,266	,324	,916
Unions	PC							,082	-,067
	Sig. (2-tailed)							,821	,854
	SCC							-,042	,038
	Sig. (2-tailed)							,909	,916
Manual labour	PC								-,101
	Sig. (2-tailed)								,781
	SCC								-,043
	Sig. (2-tailed)								,906
1 – Pearson correlation;									
2 – Spearman correlation coefficient;									
*. Correlation is significant at the 0.05 level (2-tailed);									
**. Correlation is significant at the 0.01 level (2-tailed);									

Source: Authors calculation according to Zubović et al., 2012.

Based on data presented in Table 3 it is possible to conclude that there is not a large number of significant correlation relationships among the variables that make up the HR index, except for the variable *Training Policy* being significantly correlated to three out of eight other variables. However, since there is no full correlation we will not exclude this variable from further analysis. The variable *Quality of HR department* is also significantly correlated to three other variables, but only at 0,05 level. Hence, it will not be excluded from the second testing.

In order to explore internal consistency of data used in Table 2 we have conducted Cronbach's alpha test ($\alpha_{cronbach}$). Results are given in Table 4.

Table 4. Reliability Statistics of nine variables

Cronbach's Alpha	Based on Standardized Items	N of Items
0,755	0,562	9

Source: Authors calculation according to Zubović et al., 2012.

Value of $\alpha_{cronbach}$ of 0,775 assures acceptable reliability of the model. In this way, it has been confirmed that above named nine variables used for the HR index do not have a significant impact on one another and that there is no danger of not being able to distinguish the impact of each variable. We can conclude that the HR index is able to deliver sustainable and robust results in the next part of the research.

Correlation of HR Index and business results

Performance results have been included in the second correlation test. The focus was on the impact of changes in financial results in 2011/2010 and 2010/2009 to HR index (and components) in 2011. A new hypothesis is set as follows:

The *Null hypothesis H_2* is: There is a significant one way correlation of selected variables of business results on HR Index and its components in the selected companies.

The *Alternative Hypothesis H_3* is: There is a significant two-way correlation of selected variables of business results and HR Index in the selected companies.

In this test we have included additional variables from the sample companies' financial statements (Table 5). This analysis was done using only Spearman coefficient, due to lack of normal distribution. The goal was to test correlation of selected business results with HR index and/or its components. In order to be able to test the set hypothesis we have included data on change in assets values for two time segments (2011 vs. 2010 and 2010 vs. 2009).

In Table 5 one may find some specific data on ten companies from the sample:

- Assets 11/10 – normalized values of change in company assets in 2011 compared to 2010; – i.e. we have reduced nominal values of change in assets by 8.7% (which equals to the growth rate in assets' values of all companies in population according to official statistics) in order to eliminate the impact of the exogenous factor of economic trends in the industry;
- Assets 10/09 – normalized values of change in company assets in 2010 compared to 2009; – i.e. we have reduced nominal values of change in assets by 8.4% (which equals to the growth rate in assets' values of all companies in population according to Table 3) in order to eliminate the impact of the exogenous factor of economic trends in the industry;
- ROA 10/09 – growth rate of ROA in 2010 as compared to 2009;
- Profit 10 – company profits in 2010 (in RSD million);

Employees 10/09 – growth rate in the number of employees in 2010 as compared to 2009.

Table 5. Business results of sample companies for 2009 and 2010

Company	Assets 11/10	Assets 10/09	ROA 10/09	Profit 2010	Employees 10/09
A	-0,240	0.212	-0.167	2	0.176
B	0,560	0.129	-0.022	57	- 0.037
C	0,147	0.251	0.075	3	0.103
D	0,115	0.152	-0.006	67	0.337
E	0,934	-0.207	0.616	85	0.197
F	-0,220	1.307	-0.421	64	0.205
G	-0,116	0.041	0.059	1	0.000
H	0,200	-0.064	-0.823	-201	-0.137
I	0,135	-0.086	-0.091	17	-0.032
J	-0,185	-0.074	-0.934	1	-0.800

Source: Authors calculations according to SBRS, 2012.

In the correlation test, we have analyzed the influence of business results of the selected companies to change in observed variables and in HR index in general on one hand (by observing the change in Assets values in the years preceding HRI), and the opposite direction, on the other hand (by observing the change in assets in the next year). We will do the same with business data from 2009, 2010 and 2011, and the variables creating HR Index from the mid 2011 (the time the survey was conducted). Using selected data from tables 2, 3 and 4 enables us to complete the second correlation analysis that will lead to most important conclusions (see Table 6) in order to test the hypothesis H_2.

Data presented in Table 6 show some significant correlations. We can distinguish the following significant correlations:

1. Negative correlation of the Quality of HR department with the change in company assets (in the previous year 2010/2009);
2. Positive correlation of change in the HR Index, Quality of HR department, Training needs and Training policy with the change in company assets (in the next year 2011/2010);
3. Age of employees with the profit level;
4. Change in employment with the profit level;
5. Age of employees with change in employment.

At first, we should focus on correlations 3-5. We find them not to be very important, but still necessary to be explained. These three statistically significant correlations can be placed in a tripartite relationship. Since the variable Age, as noted in explanation of Table 2, represents the share of employees younger than 45, it is to conclude that higher share of younger employees enables more job openings. That is because younger people, as a rule, have lower wages, which leads to higher profit margins for the owners. Since this industry is highly labor oriented, and skills needed are not very advanced, if profit margin is high, owners will employ more people in order to increase profit levels.

Table 6. Correlation between selected variables and HRI with business results

Variables		Assets 10/09	Assets 11/10	ROA 10/09	Profit 2010	Employees 10/09
Company size	SCC	,280	,305	-,064	-,124	-,210
	Sig. (2-tailed)	,434	,391	,862	,732	,561
	N	10	10	10	10	10
Training policy	SCC	-,345	**,673***	,539	,280	-,164
	Sig. (2-tailed)	,328	**,033**	,108	,434	,651
	N	10	**10**	10	10	10
Training needs	SCC	-,571	**,767****	,031	,191	-,472
	Sig. (2-tailed)	,085	**,010**	,933	,598	,168
	N	10	**10**	10	10	10
Quality of HR Dept.	SCC	**-,796****	**,729***	,377	,134	-,419
	Sig. (2-tailed)	**,006**	**,017**	,283	,712	,228
	N	**10**	**10**	10	10	10
Recruiting	SCC	-,113	,164	,245	,088	,120
	Sig. (2-tailed)	,755	,651	,494	,808	,742
	N	10	10	10	10	10
Age	SCC	,406	-,197	,166	**,722***	**,862****
	Sig. (2-tailed)	,244	,586	,646	**,018**	**,001**
	N	10	10	10	**10**	**10**
Unions	SCC	-,558	,614	,485	,049	-,245
	Sig. (2-tailed)	,093	,059	,156	,893	,494
	N	10	10	10	10	10
Manual labor	SCC	,274	,103	-,199	-,089	-,178
	Sig. (2-tailed)	,443	,777	,582	,806	,622
	N	10	10	10	10	10
Graduated	SCC	-,114	-,418	-,570	,000	-,190
	Sig. (2-tailed)	,754	,230	,086	1,000	,599
	N	10	10	10	10	10
HR Index	SCC	-,588	**,745***	,345	,061	-,442
	Sig. (2-tailed)	,074	**,013**	,328	,868	,200
	N	10	**10**	10	10	10
Assets 10/09	SCC		-,479	-,042	,067	,455
	Sig. (2-tailed)		,162	,907	,854	,187
	N		10	10	10	10
Assets 11/10	SCC			,491	,267	-,188
	Sig. (2-tailed)			,150	,455	,603
	N			10	10	10
ROA 10/09	SCC				,511	,479
	Sig. (2-tailed)				,132	,162
	N				10	10
Profit 2010	SCC					**,723***
	Sig. (2-tailed)					**,018**
	N					**10**
1 – Spearman correlation coefficient;						
*. Correlation is significant at the 0.05 level (2-tailed); **. Correlation is significant at the 0.01 level (2-tailed).						

Source: Authors calculation according to Zubović et al., 2012.

More important are correlations 1 and 2. At the same time the change in assets' value in 2010 over 2009 was negatively correlated with the quality of HR department in 2011. This means that firms that have achieved growth in asset values tend to reduce the quality of HR

department in the next fiscal year. The explanation may be the fact that firms which have in one fiscal year allocated significant resources to increase their assets sought the reduction of investments that should be aimed at increasing the quality of HR services. However the correlation becomes positive when comparing results to the next fiscal year. This means that there is a significant impact of improved quality of HR department to growth in company assets. Another two components of the HR Index are positively correlated to assets value in the next year.

Therefore it is not surprise to see that the HR Index is positively correlated to change in assets value in the next year. Most significantly, this study proved there is no correlation between business performance in 2010/2009 and the level of HR Index in 2011, confirming hypothesis H_2 and rejecting the hypothesis H_3. In this way we have confirmed that planned strategic investments in human resources and policies of human resources developed training are not result of good business results in previous years, and that improved quality of the components creating HR Index will result in better business performance.

At the end by using results from correlation analysis it is possible to conduct two regression analyses. In the first one we shall use three variables (Training policy, Training needs and Quality of HR department) which have shown a significant positive correlation with the change in Assets value 2011/10. Three variables are used as predictors and change in assets is used as a dependent variable. Results are shown in Tables 7 and 8.

Table 7. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,851[a]	,725	,587	23,99138
a. Predictors: (Constant), Quality of HR Dept, Training policy, Training needs				

Source: Authors calculation according to Zubović et al., 2012.

Table 8. Regression Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-18,353	13,049		-1,406	,209
	Training policy	11,010	17,795	,273	,619	,559
	Training needs	23,491	16,690	,728	1,407	,209
	Quality of HR Dept.	-2,827	11,902	-,130	-,238	,820
a. Dependent Variable: Assets 11/10						

Source: Authors calculation according to Zubović et al., 2012.

Despite the fact that R2 value is very high, regression should not be accepted since the significance (Table 8) is not acceptable. For that reason the second regression is conducted by using only the HR Index as a predictor with Change in assets remaining the dependent variable (Tables 9 and 10).

Table 9. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,815[a]	,665	,623	22,93763
a. Predictors: (Constant), HR Index				

Source: Authors calculation according to Zubović et al., 2012.

Table 10. - Regression Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-39,336	15,073		-2,610	,031
	HR Index	6,863	1,723	,815	3,984	,004
a. Dependent Variable: Assets 11/10						

Source: Authors calculation according to Zubović et al., 2012.

Table 11. – Anova test[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.835	1	.835	15.869	.004[b]
	Residual	.421	8	.053		
	Total	1.256	9			
a. Dependent Variable: Assets 11/10						
b. Predictors: (Constant), HR Index						

Source: Authors calculation according to Zubović et al., 2012.

In order to test significance of overall regression, we consider relevant F test (testing the null that all regression coefficients are equal to zero vs. alternative that at least one is different than zero). It is lower than standard level of 5% level of significance, confirming that explanatory power of overall regression is significant (Table 11).

From the table 9 we may see that the value of R^2 is at high level confirming that HR Index may explain 66.5% of the variance of change in assets value in the following year. In table 10 we may observe that coefficients are statistically significant and therefore it is possible to construct regression formula which tells us that each point change in HRI value would lead to 6.8% increase in assets value of the company in the following year, as:

$$As+1 = -39,36\% + 6,863\%*HRI \qquad (1)$$

Where the following represent:

As+1– Change in Assets value in the following year

HRI– HR Index

In this way we have shown there is a need for creation of an index instead of using individual variables to predict changes in most important business results which is the assets value of the company.

Conclusions

Main goal of the paper which was to confirm that sustainability in business can be achieved by improving quality of human resources and its organization in the company has been tested in meat processing industry in Serbia. The initial assumption tested was that if any correlation exists between business results and the level of human capital, positive business result does not tend to increase the level of HR Index but quite the opposite. The research, which tested results in companies that create over 20% of the assets of the whole sector, has shown that the level of established HR Index, being researched for years by several authors and, adapted to the environment of the economy without the continuous measurement and evaluation of investments in human resources, is not a consequence of good business results. We have demonstrated that the relationship may only be one-way, which means that growth of HR Index does not result from an increase in assets (and other business indicators). However, the correlation proven may be present only in the direction of HRI towards the business results. Therefore, it has been confirmed that in spite of inadequate levels of measurement data on human resources investment, with the help of research conducted worldwide on the basis of econometric models, it is possible to apply this kind of research that directly connect basic research with practical indicators of the economy. The results of this study should be used for further research to be conducted in other business sectors and in different countries of the Western Balkans and beyond.

Shortcomings in this study may exist due to small total number of employees in the MPI sector of only around 12,000 employees according to SBRS data. Moreover it is possible that some companies are unintentionally omitted from the research due to the classification methodology, since they might predominantly operate in one but statistically belong to other sector.

Annex

Table 12. Macroeconomic data from the meat processing industry in Serbia and micro-economic data on research sample companies

SIC07 classification of economic activities	Number of companies		Employees		Assets (RSD mil.)		Turnover (RSD mil.)		Profit/Loss (RSD mil.)	
	2009.	2010.	2009.	2010.	2009.	2010.	2009.	2010.	2009.	2010.
Processing and preserving of meat	231	240	8,512	8,300	46,498	53,151	44,151	42,987	-355	-471
Processing and preserving of poultry meat	39	34	692	783	9,935	5,967	2,772	3,550	-363	-233
Production of meat and poultry meat products	145	152	2,286	3,195	11,875	14,904	12,950	13,498	-7	-365
Industry Total	415	426	11,490	12,278	68,308	74,022	59,873	60,036	-725	-1,070

SIC07 classification of economic activities		Number of companies		Employees		Assets (RSD mil.)		Turnover (RSD mil.)		Profit/Loss (RSD mil.)	
		2009.	2010.	2009.	2010.	2009.	2010.	2009.	2010.	2009.	2010.
Research Sample		10	10	2,439	2,531	10,931	15,920	12,103	14,295	124	93
Sample share in population (%)				21.23%	20.61%	16.00%	21.51%	20.21%	23.81%		

Source: SBRS, 2012.

References

1. Awang, A. H., Ismail, R., Noor, Z. M. (2010): *Training Impact on Employee's Job Performance: A Self Evaluation,* Ekonomska istraživanja, vol. 23, no. 4, pp. 78-90.

2. Bassi, L., McMurrer, D. P. (199): *Indicators of Human Capital Investment and Outcomes from the American society for training & development,* in: Measuring and Reporting Intellectual Capital: Experience, Issues, and Prospects, Amsterdam, June 1999, pp. 1-10, available at: www.oecd.org/dataoecd/61/44/1947815.pdf, accessed at: 12 March 2012.

3. Bassi, L., McMurrrer, D. (2007): *Maximising your Return on People*, Harvard Business Review, vol. 85, no. 3, pp. 115-123.

4. Birch, K., Levidow, L., Papaioannou, T. (2010): *Sustainable Capital?* The Neoliberalization of Nature and Knowledge in the European "Knowledge-based Bio-economy", Sustainability, no. 2*,* pp. 2898-2918.

5. Chasovskaya, E. (2010): *Human Resources Analysis in International Business,* Information Technologies, Management and Society, vol. 3, no. 1, pp. 112-114.

6. Cranet (2008): *The list of researches conducted using Cranet questionnaire*, available at: www.cranet.org/downloads/EnglishPost2000.doc, accessed at: 14 October 2011.

7. Darwish, T., Singh, S., Mohamed, A. (2013): *The role of strategic HR practices in organisational effectiveness: an empirical investigation in the country of Jordan*, International Journal of Human Resource Management, (serial online), vol. 24, no. 17, pp. 3343-3362.

8. Dearden, L., McIntosh, S., Myck, M., Vignoles, A. (2002): *The returns to academic and vocational qualifications in Britain,* Bulletin of economic research, vol. 54, no. 3, pp. 249-274.

9. Denisova Schmidt, E. (2011): *Human Resource Management in Russia: Some Unwritten Rules*, WU Online Papers in IBC, series one: Intercultural Communication and Language Learning, paper 8, Department für Fremdsprachliche Wirtschaftskommunikation, WU Vienna University of Economics and Business, Vienna, pp. 1-12, available at: http://epub.wu.ac.at/3153/1/08-denisova_endversion.pdf, accessed at: 10 June 2014.

10. Done, I., Domazet, I. (2011): *Improving the quality of human resources by implementation of internal marketing*, in: Andrei et al. (Edt.), The role of labour markets and human capital

in the unstable environment, KARTA GRAPHIC Publishing House, Ploiesti, Romania, pp. 47-75.

11. Ene, C. (2012): *Consumer protection in Bulgaria: EU challenges*, Economics of Agriculture, vol. 59, no. 2, pp. 253-265.

12. De la Fuente, A., Ciccone, A. (2002): *Human capital in a global and knowledge-based economy,* Final Report, European Commission, Directorate General for Employment and Social Affairs, Unit A.1, Brussels, Belgium, available at: www.antoniociccone.eu/wp-content/uploads/2007/07/humancapitalpolicy.pdf

13. Government of Serbia (2008): *National Strategy of Sustainable Development of Republic of Serbia*, Official Gazzete of the Republic of Serbia, no. 57/08.

14. Greer, C. R. (2006): *Strategic Human Resource Management,* 2nd edition, Dorling Kindersley (India) Pvt Ltd, India.

15. Griliches, Z. (1997): *Education, human capital and growth: a personal perspective*, Journal of Labor Economics, vol. 15, no. 1- Part 2, pp. S330-S344.

16. Hanson, B., Johanson, U., Leitner, K. H. (2004): *The impact of human capital and human capital investments on company performance - Evidence from literature and European survey results,* in: Descy, P., Tessaring, M. (Eds.) Impact of education and training, Cedefop Reference series, 54, Office for Official Publications of the European Communities, Luxembourg, pp. 262-319.

17. Katou, A., Budhwar, P. (2012): *The Link between HR Practices, Psychological Contract Fulfillment, and Organizational Performance: The Case of the Greek Service Sector,* Thunderbird International Business Review, (serial online), November 2012, vol. 54, no. 6, pp. 793-809.

18. Kwon, K., Rupp, D. E. (2013): *High-performer turnover and firm performance: The moderating role of human capital investment and firm reputation,* Journal of Organizational Behavior, vol. 34, no. 1, pp. 129-150.

19. Montoya, J. A. (2013): *The Value of Human Capital in Colombia, 2001-2009: An Estimate Based on the Lifetime Income Approach*, October 9, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2338318

20. Mubarik, M. S., Govindaraju, V. C., Devadason, E. S. (2014): *Proposed Framework for Assessing Human Capital: Derivation of the Human Capital Index and its Application*, May 5, pp. 1-28, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2433166

21. Nikolić, I., Zubović, J. (2013): *Structural changes in Serbian industry during transition,* Industrija, vol. 41, no. 2, pp. 67-79.

22. Serbian business registers agency (SBRS), *Data on participation of meat processing industry in Serbian economy*, Materials received by email on request to SBRS, sent in January 2012.

23. Stacey, R. D. (2001): *Complex responsive processes **in** organizations: Learning and knowledge creation,* London: Routledge, UK.

24. Subić, J., Jeločnik, M., Jovanović, M. (2013): *Evaluation of Social Sustainability of Agriculture within the Carpathians in the Republic of Serbia*, Scientific Papers. Series Management, Economic Engineering in Agriculture & Rural Development, vol. 13, no. 2, pp. 411-415.

25. Theriou, G., Chatzoglou, P. (2014): *The impact of best HRM practices on performance – identifying enabling factors,* Employee Relations, (serial online), September 2014, vol. 36, no. 5, pp. 535-561.

26. Tkachenko, O., Ardichvili, A. (2013): *Human Capital Development in Central and Eastern Europe: an Analysis of Trends and Challenges Facing Hungary, the Czech Republic, Slovenia, Estonia, and the Russian Federation*, published on UFHRD Conference, Brighton, UK, available at: www.ufhrd.co.uk/wordpress/wp-content/uploads/2013/09/Tkachenko-Ardichvili-working-paper.pdf, accessed at: 10 June 2014.

27. Watson Wyatt Worldwide Research (2012): *Human capital index: Linking human capital and shareholder value,* Watson Wyatt Worldwide Research, Washington DC, USA, pp. 1-12.

28. Zubović, J., Domazet, I. (2013): *Effectiveness of government interventions at labour markets: the case of women and youth in Serbia*, Actual Problems of Economics, vol. 13, no. 139, pp. 302-313.

29. Zubović, J., Domazet, I., Bradić Martinović, A. (2008): *Foreign investments to developing countries´ food industry: does it improve competitiveness, trade and R&D*, ин proceedings State, Possibilities and Perspectives of Rural Development on Area of Huge Open-pit Minings, Institute for Agricultural Economics, Belgrade, pp. 79-85.

30. Zubović, J., Jeločnik, M., Subić, J. (2012): *A survey conducted in meat processing industry companies in Serbia 2011-2012*, unpublished research material, internal documentation (questionaires), IAE Belgrade.

31. Zubović, J., Jeločnik, M., Subić, J. (2011): *The Analysis of HR Index in Serbian Financial Industry*, Industrija, vol. 39, no. 1, pp. 227-242.

KAKO LJUDSKI RESURSI UTIČU NA ODŽIVOST POSLOVANJA? MODELIRANJE, TESTIRANJE I KORELACIJA HR INDEKSA I POSLOVNIH REZULTATA

Jovan Zubović[5], Marko Jeločnik[6], Jonel Subić[7]

Abstract

U ovom radu autori analiziraju uticaj kompozitnog indeksa ljudskih resursa na održiv rast u pojedinim granama privrede u zemljiu tranziciji. Održivost nacionalne privrede postaje sve više zavisna od ekonomije znanja. Ekonomija znanja je implementirana u strategije održivog razvoja u velikom bru evropskih zemalja. Ekonomija znanja je uglavnom zasnovana na ljudskim resursima I načinu kako se oni organizuju stilu rukovođenja na konkurentnom tržištu. Kako bi se potvrdio značaj indeksa ljudski resursa (HRI)u ovom radu su testirani dobijeni razultati kroz modeliranje, merenje I korelaciju dobijenog HR indeksa I poslovnih rezultata na mikro nivou. Analiza je sprovedena u sektoru mesno-prerađivačke industriji Srbije. Rezultati su takođe upoređeni sa rezultatima dobijenim u istraživanju u finansijkom sektoru. Potvrđeno je da model može da se primeni u zemljama u kojima ne postoje zvanični statistički podaci o nivou ulaganja u ljudske resurse. Fokus istraživanja je bio da se utvrdi smer korelacije koja postoji, odnosno da se potvrdi da ulaganje u ljudske resurse void ka poboljšanju poslovnih rezultata. Time je potvrđeno da se ovaj model može koristiti u svim sektorima privrede. Rezultati su potvrdili da je u privredi Srbije moguće u uslovima recesije ostvariti povoljne poslovne rezultate kroz investicije u ljudske resurse I da kompanije koje podižu svoj HRI kao rezultat ostvaruju natprosečne poslovne rezultate I održivi rast.

Ključne reči: *Investicije, HR indeks, Korelacija, Modeliranje.*

5   Dr Jovan Zubović, naučni saradnik, Institut ekonomskih nauka, Zmaj Jovina 12, 11000 Beograd, Srbija, Telefon: +381 11 26 23 055, E-mail: jovan.zubovic@ien.bg.ac.rs

6   Marko Jeločnik, M.A., istraživač saradnik, Institut za ekonomiku poljoprivrede, Volgina 15, 11060 Beograd, Srbija, Telefon: +381 11 69 72 852, E-mail: marko_j@iep.bg.ac.rs

7   Dr Jonel Subić, viši naučni saradnik, Institut za ekonomiku poljoprivrede, Volgina 15, 11060 Beograd, Srbija, Telefon: +381 11 69 72 858, E-mail: jonel_s@iep.bg.ac.rs

ECONOMIC COST – EFFECTIVENESS OF DIFFERENT NITROGEN APPLICATION IN THE PRODUCTION OF CORN ON CHERNOZEMS SOIL

Ljubiša Živanović[1], Vlado Kovačević[2], Vladan Lukić[3]

Summary

The aim of this study is to determine the optimum quantity of nitrogen applied in corn production at which maximum profit is achieved.

Optimal nitrogen application is important for two main reasons: first for achieving maximum profitability in the production of maize and other is to avoid environmental pollution as the nitrogen is one of the main polluters.

In the three-year period (2005 - 2007) were performed research on the effects of nitrogen quantity (control - without fertilization, PKNfon, PKN_{60}, PKN_{120} and PKN_{180}) and hybrids of different vegetation length (ZPSC 434 ZPSC ZPSC 578 and 677) on yield and profitability.

Increasing application of nitrogen tended to raise grain yield by 9.9 - 13.5%. The lowest average corn grain yield (9.49 t ha^{-1}) was registered with the hybrid ZP 434. It was somewhat higher (9.75 t ha^{-1}) with the hybrid ZP 578 and the highest corn grain yield (10.03 t ha^{-1}) with ZP 677. Study shows that highest yield is not always most profitable. In production year with good water supply (2005) highest profit is achieved with moderate use of nitrogen (60 kg ha^{-1}). In draught production years (2006 and 2007) highest profit was achieved with application of 60 to 120 kg ha^{-1}.

Key words: corn production, profitability of corn production, fertilizer application.

JEL: *E61, Q13*

1   Ljubiša Živanović, Ph.D., Assistant Professor, University of Belgrade, Faculty of Agriculture, Nemanjina Street no. 6, 11080 Zemun, Serbia, Phone: +381 64 350 52 49, E-mail: ljuba@agrif.bg.ac.rs

2   Vlado Kovačević, Ph.D, Minister advisor, Ministry of agriculture and enviromental protection, Nemanjina Street no. 22-26, 11000 Belgrade, Serbia, Phone: +381 64 65 81 519, E-mail: vlado.kovacevic@minpolj.gov.rs

3   Vladan Lukić, M.Sc., Assistant, University of Belgrade, Faculty of Foresty, Kneza Višeslava Street no. 1, 11000 Belgarde, Serbia, Phone: +381 64 05 05 175, E-mail: vladan.lukic@sfb.bg.ac.rs

Ljubiša Živanović, Vlado Kovačević, Vladan Lukić

Introduction

The increase in the yield of maize in Serbia is achieved during the four cycles of selection and introduction into production of new hybrids, yield increase varied between 69,4 and 113,2 kg ha^{-1} yearly (Kojić, 1991). The largest increase was by introduction of two-line hybrids characterized by a larger genetic potential, and a greater phenotypic uniformity. Further increase in the yield of corn requires increasing the genetic yield potential of new hybrids, as well as improved cultivation technology (Kojić, Ivanović, 1986; Vasić et al., 2001; Jovanović et al., 2006). However, for a number of years in Serbia corn yields are stagnant or declining. Since 2006, until 2010, the average grain yield went down for about 170 kg ha^{-1} compared to the world average, fell by about 1,900 kg ha^{-1} compared to the EU average and less for 4,800 kg ha^{-1} than the average achieve the American corn producers (FAOSTAT, 2010). Such results are caused by a number of organizational - economic, and agro-technical reasons.

It is known that the agro-technical measures are of great importance in maize production in the context of these measures is choice of hybrids and adequate application of nitrogen. Proper selection of hybrids that will in specific conditions of climate, soil and other environmental factors lead to achieve high and stable yields of maize is the first step on this path. In this respect, the modern hybrids, beside high genetic yield potential, are characterized by a higher tolerance to stress conditions. The newest hybrids submitted earlier and denser sawing, a more rational use of nutrients and better use of water (Stojaković et al., 1996; Živanović, 2005).

On the other hand, the mineral nitrogen nutrition is one of the main factors that determine the productivity of plants and agricultural products quality. Nitrogen as an element of the proteins shows a major impact on the character of the physiological and biochemical processes, the processes of organs developments, time duration for certain phases of growth and development, the size, structure and quality of yield (Jevtić, 1986). For corn nitrogen has a major role as the constitutive element of proteins, the basic ingredients of protoplasm. The optimal nitrogen nutrition positive effect on the development of the root system and aboveground biomass, as well as the nutritional value of grains (Glamočlija, 2004). Numerous authors noted the existence of dependence between the intensity and productivity of photosynthesis and plant nitrogen nutrition, by increasing the concentration of nitrogen in the nutrient medium, the enzyme activity increases in carbon metabolism (Kastori, Petrović, 1980).

In numerous studies that have been performed worldwide today it has been found that the application of nitrogen fertilizer largely increases grain yield (Brković, 1985; Hojka, 2004; Blackmer, White, 1998; Binder et al., 2000; Katsvairo et al., 2003). In addition to the impact on grain yield, nitrogen fertilizers increase grain protein content (Rajković, 1978). However, the results of field trials, which are related to the problems of corn production related to use of the nitrogen are often significantly different. This is understandable if bears in mind that the effect of mineral fertilizers, especially nitrogen, depends largely on the type and soil fertility, weather conditions, manner and time of their use and others. According to the Nedić et al. (1991), increased quantity of nitrogen in corn production significantly increases the yield and

422   EP 2015 (62) 2 (421-436)

nutritional value of grains under the conditions of optimal water regime during the growing period of the plants. The effect depends also on the hybrids (Nedić et al., 1990). Late maturity hybrids strongly respond to intensive nitrogen nutrition because they have a longer growing period and a longer period of adoption of nitrogen from the soil.

Other aspect of excessive application of nitrogen fertilizers may result in many awkward and harmful effects. First of all, to have a prolonged duration of the growing season, reducing harvest index, increased susceptibility of plants to pathogenic microorganisms and lodging. Excessive use of nitrogen fertilizers can cause some environmental problems such as pollution of groundwater with nitrates and the occurrence of dense vegetation in drainage canals. The use of nitrogen in quantity that exceed the needs of plants, leading to increased levels of nitrates in the soil, and increased concentrations of NO_3 - N in the soil after harvest, increasing the risk of their leaching in groundwater (Schepers et al., 1991). Nitrogen at a dose greater than 300 kg ha^{-1} and the concentration of nitrate in ground water drainage more than 11,3 mg L^{-1} (Villar Mir et al., 2002) are the maximum content of NO_3 - N allowed in drinking water (EU Nitrates Directive).

Planning and use of optimal use of nitrogen increases the profitability of agricultural production (Zakić, Stojanović, 2008).

Further application of appropriate agricultural technology reduces business risk faced by producers in agricultural production (Zakić, Kovačević, 2012). All activities leading to the possibility of more certain planning of production and product quality have led to farmers increased certainty when entering into forward sales and the application of appropriate hedging strategies.

All mentioned above leads to an increase in the food security. No less important is the environmental aspect with regard to the reduction of excessive use of nitrogen fertilizer related to environmental protection.

Methodology and experiment model

These researches conduct two factors:

1. Nitrogen quantity (A)

A_1 – Control trial (without fertilizers applied)

A_2 – $P_{90} K_{60} N_{30}$ kgha^{-1}

A_3 – $P_{90} K_{60} N_{60}$ kgha^{-1}

A_4 – $P_{90} K_{60} N_{120}$ kgha^{-1}

A_5 – $P_{90} K_{60} N_{180}$ kgha^{-1}

2. Hybrids (B)

B_1 – ZPSC 434 (FAO 400)

B_2 – ZPSC 578 (FAO 500)

B_3 – ZPSC 677 (FAO 600)

Agricultural technology in the experiments is standard, usual for regular production of corn. In all three studding years preceding crop was winter wheat. After the wheat harvest plowing was done stubble to a depth 10-15 cm. Before primary tillage fertilization with 300 kg ha^{-1} fertilizer NPK 10:30:20 was applied. Primary tillage was performed in the fall, depending on weather conditions, the depth was about 25 cm. During the spring was conducted additional soil tillage, then additional nitrogen fertilization KAN (27% N) in quantities 30, 90 and 150 kg ha^{-1}, active ingredient (NH_4NO_3), and finally seedbed preparation.

Sowing was done manually in the second half of April, according to the plan of sawing, inter-row spacing of 70 cm with 2 seeds in whole. After germination thinning was carried out at a steady, planned number of plants. Hybrids were grown in the recommended (optimal) plant density, depending on the FAO group, and ZP 434-64.935 plants per hectare (70x22 cm), then ZP 578-57.143 plants per hectare (75x25 cm) and ZP 677-51.020 plants per hectare (70x28 cm).

The plant care are done by appropriate herbicides for weed control (after planting and before emergence: Acetochlor two l ha^{-1} + Atrazine 1 l ha^{-1}, and during the growing season Motivell 1 l ha^{-1} + Cambio two l ha^{-1}) and needed hoeing.

Harvest (harvest) of corn was done manually at the end of September or early October, depending on the year.

Grain yield of 14% with water was calculated by the following formula:

$$QV = Pi \times (100 – U)/100 – US$$

Where is:

QV – corn yield with 14% moisture,

Pi – yield of raw grains,

U – grain' water content at harvest,

US – calculated grain water content (14%).

The research results were analyzed by statistical analysis and presented in tables and graphs.

Weather conditions

Mean monthly air temperatures in all years of study, as well as the long-term average (1995 - 2004) are shown in Table 1.

Table 1. Mean monthly air temperature (^{0}C) for the growing season of maize (IV - IX), in 2005 - 2007 at Zemun Polje in the years of study, as well as the long-term average (1995 - 2004) at the locations for the vegetation period

Year	Location	Month						Average
		IV	V	VI	VII	VIII	IX	
2005	Zemun Polje	13,1	17,6	20,2	22,8	21,4	18,9	19,0
2006	Zemun Polje	14,1	17,6	20,3	24,6	21,7	19,7	19,7
2007	Zemun Polje	14,7	19,7	23,6	25,7	24,4	16,8	20,8
Average (1995 - 2004)	Zemun Polje	12,9	18,7	21,8	23,2	23,4	17,8	19,6

Source: RHSS, reports for 2005, 2006 and 2007.

Data on rainfall by months within growing period in the years of study, as well as the long-term average (1995 - 2004) are shown in Table 2, years in which the tests are performed are differed significantly, both in terms of total amount rainfall during the growing period, and in terms of their schedule by months.

Table 2. Amounts of rainfall (mm) for the growing season of maize (IV - IX), in 2005 - 2007 (Zemun Polje)

Year	Location	Month						Average
		IV	V	VI	VII	VIII	IX	
2005	Zemun Polje	53,0	48,0	94,0	90,0	145,0	56,0	486,0
2006	Zemun Polje	97,0	40,0	137,0	22,0	123,0	26,0	445,0
2007	Zemun Polje	4,0	79,0	108,0	18,0	72,0	85,0	366,0

Source: RHSS, reports for 2005, 2006 and 2007.

Soil characteristic

Chernozems are formed under natural conditions that differ significantly from the evaluations of other soil types. Chernozems is evaluated under semi-arid continental climate and steppe grassland vegetation. However, the important for creation of chernozems are other natural factors, such as relief, geological substrate, terrain and other natural factors. Chernozems is the soil type with two specific genetic horizons: humus - accumulative A1 horizon and the parent rock, and C horizons. However, transitional AC horizon can appear.

Humus A1 horizon is the most distinctive horizon after which chernozems is named. It has an average depth of 40 to 60 cm, depending on the subtypes of the relief and chernozems. Humus horizon color is dark brown to black, depending on the amount of humus and soil moisture condition, structure of chernozems is crumbly and grainy. The transition of the humus horizon of forest is gradual, so it is not easy to determine where the first ends and where another begins.

Transitional AC horizon in color, structure and other properties is located in the middle between the dark colored humus horizon above and below the yellow les. The color of this horizon is dark grey, with frequent intersections of the black soil. The structure of the transitional horizon is somewhat coarser than in humus and can be coarse-grained, granulated

or vague. Transitional horizon is enriched with calcium - carbonate ($CaCO_3$). The depth of the transitional horizon is different for different chernozems, and usually about 50 cm or more. This horizon is also suitable for development of rooting plants, therefore, together with humus horizon is one of the most active layer of soil. C horizon in Serbian chernozems is mostly les. Color and other characteristics of the les are mostly affected by the groundwater and the amount of lime in the surface layer of the horizon. Chernozems soil has medium texture, but there are chernozems with more clay and sand. For the physical of cehrnozems of particular importance is chernozems structure. Among the structural aggregates in chernozems dominate those whose dimensions are between 3 and 7 mm. Chernozems structure is usually worst in the upper layers, and in the depth gets better and structural units are more stable. Chernozems has good water, and air characteristic.

The chemical characteristic of chernozems are conditioned by its richness in humus and mineral clay and richness in lime and adsorbed calcium (Ca^{++}). The amount of humus in chernozems can vary greatly, and in our chernozems amounts of 2,5 to 6%. The content of lime can be different in the chernozems. The amount of calcium - carbonate in the surface layer is not large, but rapidly increases with depth, so the transition AC horizon in the surface layer of the C horizon may range from 25 to 35%, and more. Chernozems is characterized by favourable biological characteristics as a consequence of a chernozems pH neutral soil reaction.

Total porosity varies in different depth profiles. Basically, it is the largest in the humus - accumulative horizon. Chemical properties of the soil in the experimental field are presented in Table 3.

Table 3. Chemical characteristics of carbonate chernozems (Zemun Polje)

Depth (cm)	pH		Humus (%)	Nitrogen (%)	C/N	$CaCO_3$ (%)	mg in 100 g	
	H_2O	n1KCl					P_2O_5	K_2O
0 - 30	7,71	7,34	2,86	0,19	8,6:1	4,40	25,40	22,20
30 – 60	7,81	7,48	2,47	0,17	8,6:1	11,60	17,10	18,40
60 – 90	7,87	7,66	1,11	0,08	8,4:1	24,10	2,70	7,00

Source: Živanović, 2012.

Total Content of mineral nitrogen before sowing maize is presented in Table 4.

Table 4. Content of mineral nitrogen before sowing maize (mg kg^{-1})

Year	Depth (cm)	Cernozems			Average	Index (%)
		NH_4^+	NO_3^-	Sum		
	0 - 30	4,9	17,5	22,4	18,9	42,1
	30 - 60	3,5	10,5	14,0	14,3	31,8
2005	60 - 90	2,8	8,5	11,3	11,7	26,1
	0 - 90	11,2	36,5	47,7	44,9	100,0
	%	23,5	76,5	100,0	-	100,0

Year	Depth (cm)	Cernozems			Average	Index (%)
		NH_4^+	NO_3^-	Sum		
2006	0 - 30	8,0	14,7	22,7	21,1	39,1
	30 - 60	7,0	12,7	19,7	18,2	33,7
	60 - 90	6,0	8,0	14,0	14,7	27,2
	0 - 90	21,0	35,4	56,4	54,0	100,0
	%	37,2	62,8	100,0	-	120,3
2007	0 - 30	4,0	19,5	23,5	22,6	45,5
	30 - 60	2,8	13,7	16,5	15,2	30,6
	60 - 90	2,0	11,5	13,7	11,9	23,9
	0 - 90	8,8	44,7	53,5	49,7	100,0
	%	16,5	83,5	100,0	-	110,7
Yearly average		13,7	38,9	52,6	49,7	-
Index (%)		26,0	74,0	100,0	-	-

Source: Živanović, 2012.

The soil has the mineral nitrogen content (52,6 mg kg^{-1}). At the same time, the amount of nitrate nitrogen (NO$_3$) in chernozems was 74,0%. (Bogdanović 1986) reported that the nitrogen nutrition of plants on chernozem soil types is mostly absorbing nitrate form of nitrogen, whether it is applied into the soil as fertilizer or created in the process of mineralization of organic matter. The relatively higher content of ammonium ions in the soil solution in relation to the content of nitrate ions is caused by various factors, of which the most important are the accumulation of organic matter, soil pH and soil temperature (Dijk, Eck, 1995). Low pH, low temperature and anaerobic conditions in the soil affect the increased nitrification.

The minimum content of mineral nitrogen was in the spring of 2005 (44,9 mg kg^{-1}), the larger content is in 2007 (49,7 mg kg^{-1}) and the largest in 2006 (54,0 mg kg^{-1}). This study confirms the results of Hojka (2004), that in years with more precipitation and lower air temperature in the period before the amount of mineral nitrogen in spring is lower than in years with lower rainfall and higher temperatures.

The largest content of mineral nitrogen is in the topsoil layer, where the microbiological and mineralization process are fast. The chernozems on loess terrace highest nitrate nitrogen is in a layer up to 60 cm, and then decreases and at depth 120-140 cm is found only in trace amounts. In this research, in both soil types, the highest content of mineral nitrogen was found in the soil layer 0 - 30 cm (between 39,1 and 45,5%), while in the depth profiles decreased to 30,6 to 33,7% (30-60 cm) and 23,9 to 27,2% (60-90 cm), depending on the year.

Results and discussion

Highest yields in corn production is not always most profitable. It is of importance to establish most profitable use of inputs and chose optimal hybrids in corn production.

Highest average yields is for hybrids FAO group 600 which is expected because of longer vegetation periods, second highest yields is with hybrids FAO group 500 and lowest with FAO group 400.

Highest profitability is achieved in average with application of 60 kg ha^{-1} of nitrogen.

Profitability related to nitrogen application is calculated according following calculation:

D = Y*Py – Pf

D - Profitability of additional application of nitrogen,

Y - Difference in yield in tons compared with the control test,

Py - Price of corn $ 192,7 t^{-1},

Pf - Fertilizer price $ ha^{-1},

Pf (PKN$_{fon}$) – 195 $ ha-[4],

Pf (PKN$_{60}$) – 239,61 $ ha^{-1},

Pf (PKN$_{120}$) – 328,77 $ ha^{-1},

Pf (PKN$_{180}$) – 418,13 $ ha^{-1}.

Table 5. Influence of nitrogen application and hybrid types on the yield of maize production in the 2005

Nitrogen quantity (A)	Hybrid(B)			Average yield t ha^{-1}
	ZP 434 Yield t ha^{-1}	ZP 578 Yield t ha^{-1}	ZP 677 Yield t ha^{-1}	
Control trial	10,85	10,98	11,97	11,27
PKN$_{fon}$	11,13	11,29	12,53	11,65
PKN$_{60}$	12,44	12,71	13,46	12,87
PKN$_{120}$	13,03	13,45	13,95	13,48
PKN$_{180}$	12,87	12,84	13,52	13,08

Source: Živanović, 2012.

Table 6. Cost effectiveness of application of different rate of nitrogen

Nitrogen quantity (A)	Hybrid(B)			D average $ ha^{-1}
	D(ZP 434) $ ha^{-1}	D(ZP 578) $ ha^{-1}	D(ZP 677) $ ha^{-1}	
Control trial	-	-	-	0
PKN$_{fon}$	-108,25	-135.26	-87,08	-121,77
PKN$_{60}$	66,78	132,3	47,51	68,71
PKN$_{120}$	91.32	147,20	52,76	97,10
PKN$_{180}$	-28.88	-59,71	-119,44	-69,34

Source: Authors calculation based on data from Table 5.

---

[4] Average retail fertilizer price in the period 2005.-5013, C Source: Ministry of Agriculture, Forestry and water Management of the R. Serbia (data received upon request).

On the graphs 1, 2, 3 and 4 are presented regression' correlation between nitrogen application and profitability of production in 2005.

Graph 1. Profitability of nitrogen application in ZP 434 production in 2005

Graph 2. Profitability of nitrogen application in ZP 578 production in 2005

Graph 3. Profitability of nitrogen application in ZP 677 production in 2005

Graph 4. Profitability of nitrogen application in average in 2005

Source: Regression analyses based on data from Table 6.

Year 2005 was with favourable weather conditions. According to the experimental results (Graph 1) for ZP 434 optimal quantity of applied nitrogen was in the quantity of 120 kg.

According to the experimental results (Graph 2) for ZP 578 optimal quantity of applied nitrogen was in quantity of 60 and 120 kg. The highest additional profitability is achieved in amount of 147,20 \$ ha[-1] with application of 120 kg ha^{-1}.

According to the experimental results (Graph 3) for ZP 677 optimal amount of applied nitrogen was 60 and 120 kg. The correlation between the applied and the yield of nitrogen is higher than the previous hybrids and R-square is 0,2569. According to the average results of the experiment (Graph 4) for all three hybrids optimum quantity of nitrogen was in the rate between the 60 and 120 kg ha^{-1}.

Table 7. Influence of nitrogen application and hybrid types on the yield of maize production in the 2006

Nitrogen quantity (A)	Hybrids(B)			Average yield t ha⁻¹
	ZP 434 Yield t ha⁻¹	ZP 578 Yield t ha⁻¹	ZP 677 Yield t ha⁻¹	
Control trial	9,29	9,52	9,93	9,58
PKN$_{fon}$	10,10	10,30	10,50	10,30
PKN$_{60}$	11,23	11,25	11,38	11,29
PKN$_{120}$	11,28	11,71	10,86	11,28
PKN$_{180}$	10,90	11,15	10,65	10,90

Source: Živanović, 2012.

Table 8. Cost effectiveness of application of different rate of nitrogen

Nitrogen quantity (A)	Hybrids(B)			D average $ ha⁻¹
	D(ZP 434) $ ha⁻¹	D(ZP 578) $ ha⁻¹	D(ZP 677) $ ha⁻¹	
Control trial				
PKN$_{fon}$	-38,19	-44,69	-85,16	-56,26
PKN$_{60}$	45,07	93,71	39,80	89,91
PKN$_{120}$	54,07	93,2	-149,56	-1,18
PKN$_{180}$	-107,88	-104,03	-279,39	-198,11

Source: Authors calculation based on data from Table 7.

On the graphs 5, 6, 7 and 8 are presented regression' correlation between nitrogen application and profitability of production in 2006.

Graph 5. Profitability of nitrogen application in ZP 434 production in 2006
$y = -0,0102x^2 + 1,3338x$
$R^2 = 0,617$

Graph 6. Profitability of nitrogen application in ZP 578 production in 2006
$y = -0,0147x^2 + 2,1735x$
$R^2 = 0,603$

Graph 7. Profitability of nitrogen application in ZP 677 production in 2006
$y = -0,0087x^2 - 0,0034x$
$R^2 = 0,8191$

Graph 8. Profitability of nitrogen application in average in 2006
$y = -0,0214x^2 + 2,2655x$
$R^2 = 0,8459$

Source: Regression analyses based on data from Table 8.

The 2006 was with less favourable weather conditions. According to the experimental results (Graph 5) for ZP 434 optimal quantity of applied nitrogen was in the quantity of 60 to 120 kg ha^{-1}.

According to the experimental results (Graph 6) for ZP 578 optimal amount of applied nitrogen was in quantity of 60 and 120 kg. The highest additional profitability is achieved in amount of 93,71 $ ha^{-1} with application of 60 kg ha^{-1}.

According to the experimental results (Graph 7) for ZP 677 optimal amount of applied nitrogen was 60 kg ha^{-1}.

In average in 2006 highest profitability (Graph 7) was 89,91 $ ha^{-1} with nitrogen application of 60 kg ha^{-1}.

Table 9. Influence of nitrogen application and hybrid types on the yield of maize production in the 2007

Nitrogen quantity (A)	Hybrids(B)			Average yield t ha^{-1}
	ZP 434 Yield t ha^{-1}	ZP 578 Yield t ha^{-1}	ZP 677 Yield t ha^{-1}	
Control trial	7,75	7,78	8,31	8,70
PKN$_{fon}$	8,51	8,57	9,03	9,76
PKN$_{60}$	9,97	9,46	9,84	9,64
PKN$_{120}$	9,90	9,40	9,62	9,37
PKN$_{180}$	9,35	9,39	9,38	10,90

Source: Živanović, 2012.

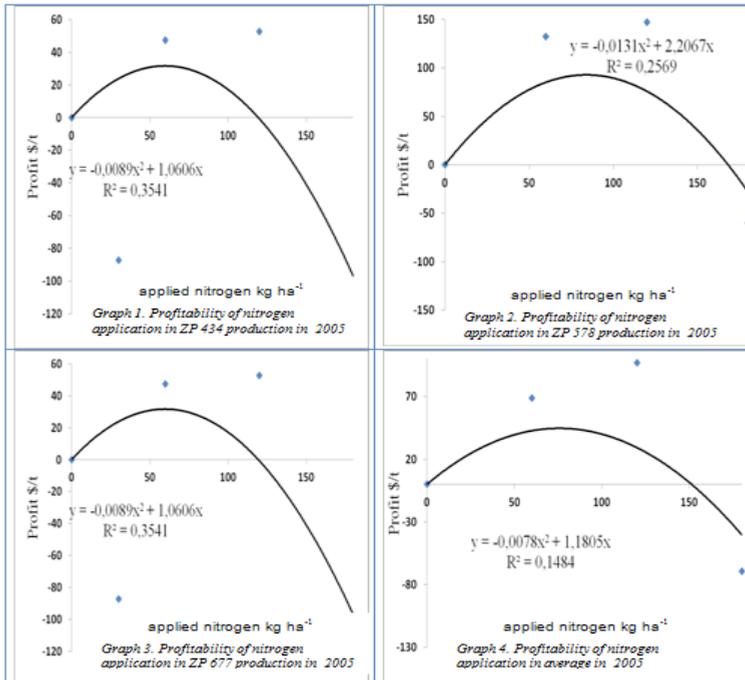**Table 10.** Cost effectiveness of application of different rate of nitrogen

Nitrogen quantity (A)	Hybrids(B)			D average $ ha^{-1}
	D(ZP 434) $ ha^{-1}	D(ZP 578)	D(ZP 677) $ ha^{-1}	
Control trial				
PKN$_{fon}$	-48,55	- 42,77	-56,26	-49,19
PKN$_{60}$	188,18	84,13	55,21	109,17
PKN$_{120}$	85,53	-16,6	-165,70	-32,26
PKN$_{180}$	-109,81	-107,89	-211,94	-143,21

Source: Authors calculation based on data from Table 9.

On the graphs 9, 10, 11 and 12 are presented regression' correlation between nitrogen application and profitability of production in 2007.

Graph 9. Profitability of nitrogen application in ZP 434 production in 2007

Graph 10. Profitability of nitrogen application in ZP 578 production in 2007

Graph 11. Profitability of nitrogen application in ZP 677 production in 2007

Graph 12. Profitability of nitrogen application in ZP 677 production in 2007

Source: Regression analyses based on data from Table 10.

The 2007 was draught year. According to the experimental results (Graph 9) for ZP 434 optimal quantity of applied nitrogen was in the quantity of 60. This hybrid amounts highest additional profit amount all three hybrids of 188,18 $ ha^{-1}.

According to the experimental results (Graph 10) for ZP 578 optimal quantity of applied nitrogen was in quantity of 60 kg ha^{-1}.

According to the experimental results (Graph 11) for ZP 677 optimal quantity of applied nitrogen was 60 kg ha^{-1} with moderate additional profit of 55,21 $ ha^{-1}.

In average in 2006 highest profitability (Graph 7) was 109,17 $ ha^{-1} with nitrogen application of 60 kg ha^{-1}.

Table11. Influence of nitrogen application and hybrid types on the yield of maize production in average (2005-2007)

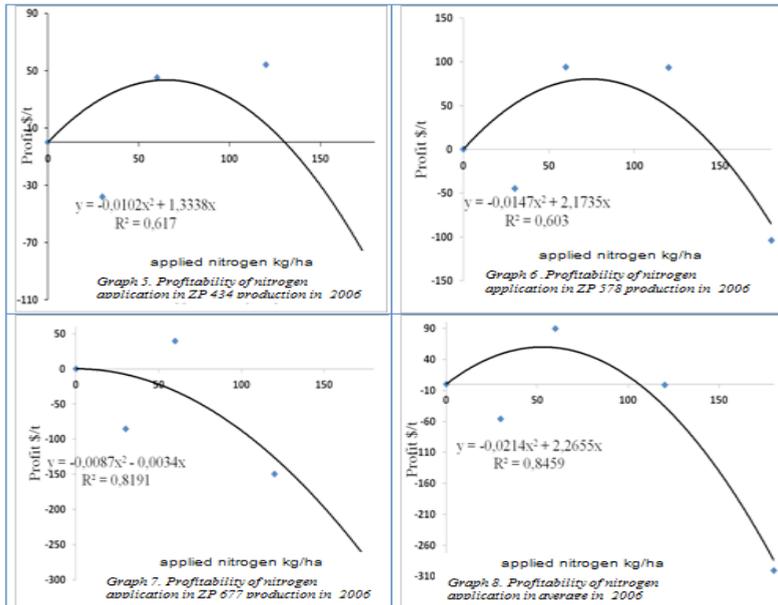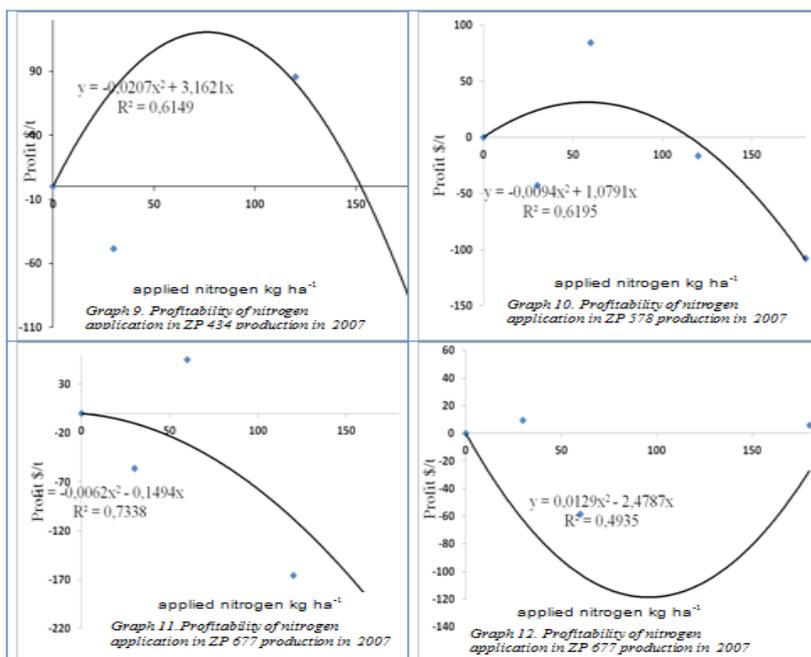| Nitrogen quantity (A)	Hybrids (B)			Average yield t ha^{-1}
	ZP 434 Yield t ha^{-1}	ZP 578 Yield t ha^{-1}	ZP 677 Yield t ha^{-1}	
Control trial	9,30	9,43	10,07	9,60
PKN$_{fon}$	9,91	10,05	10,69	10,22
PKN$_{60}$	11,21	11,14	11,56	11,30
PKN$_{120}$	11,40	11,52	11,48	11,47
PKN$_{180}$	11,04	11,13	11,18	11,12

Source: Živanović, 2012.

Table 12. Cost effectiveness of application of different rate of nitrogen

Nitrogen quantity (A)	Hybrids (B)			D average \$ ha^{-1}
	D(ZP 434) \$ ha^{-1}	D(ZP 578)	D(ZP 677) \$ ha^{-1}	
Control trial				
PKN$_{fon}$	-77,45	-75,53	-75,53	-75,53
PKN$_{60}$	128,45	140	47,51	132,59
PKN$_{120}$	75,9	73,97	-37,79	31,58
PKN$_{180}$	-82,83	-90,54	-204,23	-109,81

Source: Authors calculation based on data from Table 11.

Summing up the results of the experiment can be concluded that on average for all three years of profitability achieved in the application of 60 kg nitrogen per ha^{-1} lead to additional profit. The use of nitrogen in an amount of 120 kg ha^{-1} has a positive impact on the increase in the yield while the profit was decreased, while the application of the quantity of 30 kg of nitrogen ha^{-1} resulted in the reduction of profit as well.

Conclusion

The research is conducted on influence of the applied quantity of nitrogen and different maize hybrids on the profitability of maize production, have difference largely depending on weather conditions, both in quantity and distribution of rainfall, as well as thermal conditions.

Based on the results of our three-year study, carried out in agro ecological conditions of Srem-Serbia following conclusions can be drawn.

Grain yield varied largely depending on the weather conditions. Compared with the 2005, which is characterized by optimal environmental conditions for growth and development of corn in the year with the uneven distribution of rainfall (2006) grain yield was reduced by 14,4 %, and in the dry 2007 by 27,2 %.

Increased nitrogen application caused an increase in grain yield of 1,08 to 1,25 t ha^{-1} (10,6 to 12,2 %).

A high degree of dependence between the quantity of applied nitrogen and grain yield of maize hybrids surveyed a stream of increasing yield is quadratic regression fit. Hybrid ZP 677 reacted by increasing the grain yield only with quantity of 60 kg ha^{-1}.

Planning and use of optimal use of nitrogen increases the profitability of agricultural production. No less important is the environmental aspect with regard to the optimal recharge reduces excessive use of nitrogen fertilizer and the team and pollution.

Due to the perceived high dependence adoption of nitrogen by maize plants, which is related to the quantity and distribution of rainfall during the growing season of maize, it would be important that such experiments carried out under irrigation.

Literature

1. Binder, D. L., Sander, D. H., Walters, D. T. (2000): *Maize response to time of nitrogen application as affected by level of nitrogen deficiency*, Agronomy Journal, no. 92, pp. 1228-1236.

2. Blackmer, A. M., White, S. E. (1998): *Using precision farming technologies to improve management of soil and fertilizer nitrogen*, Australian Journal of Agricultural Research, no. 49, pp. 555-564.

3. Bogdanović, D. (1986): *Kretanje azota po profilu u zavisnosti od vlage i temperature zemljišta pri različitim dozama i sistemima primene đubriva*, Zbornik referata, XX Seminar agronoma, pp. 42-56, Kupari.

4. Brković, M. (1985): *Uticaj povećanih količina NPK hraniva na prinos nekih hibrida kukuruza gajenih u brdsko - planinskom području SAP Kosova*, Agrohemija, no. 4, pp. 289-303.

5. Dijk, E., Eck, N. (1995): *Ammonium toxicity and nitrate response of axenically grown Dactylorhiza incarnata seedlings*, New Phytology, no. 131, pp. 361-367.

6. FAOSTAT (2010), data from the FAOSTAT database, available at: www.faostat.fao.org, accessed at 22 Jan 2014.

7. Glamočlija, Đ. (2004): *Posebno ratarstvo*, Draganić, Beograd.

8. Hojka, Z. (2004*): Uticaj vremena primene i oblika azota na prinos i osobine semena inbred linija kukuruza*, Doktorska disertacija, Poljoprivredni fakultet, Novi Sad.

9. Jevtić, S. (1986): *Kukuruz,* Naučna knjiga, Beograd.

10. Jovanović, Ž., Tolimir, M., Kaitović, Ž. (2006): *ZP hibridi kukuruza u proizvodnim ogledima 2005. Godine*, Zbornik naučnih radova sa XX savetovanja agronoma, veterinara i tehnologa, vol. 12, no. 1-2, pp. 47-52, Beograd.

11. Kastori, R., Petrović, M. (1980): *Uloga makro i mikroelemenata u fiziološko - biohemijskim procesima kukuruza*, Fiziologija kukuruza, Izdanje SANU, Beograd.

12. Katsvairo, T. M., Cox, W. J., Van Es, H. M. (2003): *Spatial growth and nitrogen uptake variability of corn at two nitrogen levels*, Agronomy Journal, no. 95, pp. 1000-1011.

13. Kojić, L. (1991): *Dosadašnji rezultati i mogućnosti unapređenja proizvodnje kukuruza u Jugoslaviji*, Nauka u praksi, vol. 21, no. 3, pp. 295-312.

14. Kojić, L., Ivanović, M. (1986): *Dugoročni programi oplemenjivanja kukuruza,* in: Genetika i oplemenjivanje kukuruza - dostignuća i nove mogućnosti, 11 i 12. XII, Beograd, pp. 57–75.

15. Nedić, M., Glamočlija, Đ., Milutinović, V., Jeličić, Z. (1990): *Prinos hibrida kukuruza zavisno od količine i vremena primene mineralnih hraniva na ritskoj smonici*, Nauka u praksi, no. 4, Beograd.

16. Nedić, M., Glamočlija, Đ., Milutinović, V., Jeličić, Z. (1991): *Uticaj ishrane azotom i veličine vegetacionog prostora na prinos kukuruza*, Arhiv za poljoprivredne nauke, vol. 52, p. 187, Beograd.

17. Rajković, Ž. (1978): *Značaj i osobenosti azota u sistemu kontrole plodnosti zemljišta i primene đubriva*, Bilten za kontrolu plodnosti zemljišta i upotrebu đubriva, vol. II, no. 2, pp. 5-50.

18. Republic Hydro-meteorological Service of Serbia (RHSS), internal data on request, received: 2nd November 2011, RHSS, Belgrade.

19. Schepers, J. S., Moravek, M. G., Alberts, E. E., Frank, K. D. (1991): *Maize production impacts on groundwater quality*, Journal of Environmental Quality, pp. 12-16.

20. Stojaković, M., Jocković, Đ., Bekavac, G., Purar, B. (1996): *Oplemenjivanje kukuruza (Zea mays L.) na tolerantnost prema suši*, Zbornik radova XXX Seminara agronoma, no. 28, pp. 27-38, Institut za ratarstvo i povrtarstvo, Novi Sad.

21. Vasić, N., Ivanović, M., Petermelli, L. A., Jocković, Đ., Stojaković, M., Boćanski, J. (2001): *Genetic relationship between grain yield and components in a synthetic maize population and their implications in selection,* Acta Agronomica Hungarica, vol. 49, no. 4, pp. 337-342.

22. Villar Mir, J. M., Villar Mir, P., Sockle, C. O., Ferrer, F., Aran, M. (2002): *On - farm monitoring of soil nitrate - nitrogen irrigated cornfields in the Ebro Valley (Northeast Spain)*, Agronomy Journal, no. 94, pp. 373-380.

23. Zakić, V., Kovačević, V. (2012): *Importance of commodity derivatives for Serbian agricultural enterprises risk management*, in: Proceedings from International Scientific Meeting - Sustainable agriculture and rural development in terms of the republic of Serbia strategic goals realization within the Danube region, Tara 6-8 December 2012, IAE Belgrade, pp. 907-924.

24. Zakić, Z., Stojanović, Ž. (2008): *Ekonomika agrara*, CID Ekonomskog fakulteta u Beogradu, Beograd.

25. Živanović, Lj. (2005): *Uticaj vremena setve na ontogenezu i prinos hibrida kukuruza različite dužine vegetacionog perioda*, Magistarska teza, Poljoprivredni fakultet, Beograd.

26. Živanović, Lj. (2012): *The influence of soil type and nitrogen rates on the productivity of corn hybrids of different FAO maturity groups*, doctoral theses, Faculty of Agriculture, University of Belgrade.

EKONOMSKA ISPLATIVOST PRIMENE RAZLIČITIH KOLIČINA AZOTA U PROIZVODNJI HIBRIDA KUKURUZA RAZLIČITIH FAO GRUPA ZRENJA NA ZEMLJIŠTU TIPA ČERNOZEM

Ljubiša Živanović[5], Vlado Kovačević[6], Vladan Lukić[7]

Sažetak

Cilj rada je utvrđivanje optimalne količine primene azota u gajenju kukuruza pri kojoj se ostavruje maksimalni prihod.

Optimalna aplikacija azota je važna iz dva razloga: prvo za postizanje maksimalne profitabilnosti u proizvodnji kukuruza i drugih je da se izbegne zagađenje životne sredine s obzirom da je azot je jedan od glavnih zagađivača. Istraživanja su sprovedena u periodu od tri godine (2005 - 2007) o efektima količine primenjenog azota (kontrola - bez đubrenja, PKNfon, PKN_{60}, PKN_{120} i PKN_{180}) i hibrida različite dužine vegetacije (ZPSC 434 ZPSC ZPSC 578 i 677) na prinos i profitabilnost proizvodnje.

Povećanje primena azota ima tendenciju da podigne prinos od 9,9 - 13,5%. Najniža prosečan prinos zrna kukuruza (9,49 t ha^{-1}) je registrovan kod hibrida ZP 434. Prinos je bio nešto veći (9,75 t ha-1) kod hibrida ZP 578 i najviši prinos zrna (10,03 t ha^{-1}) sa ZP 677. Studija pokazuje da najveći prinos nije uvek najprofitabilnija. U proizvodnoj godini sa dobrim vodnim režimom (2005) najveći profit je ostvaren sa umerenom upotrebom azota (60 kg ha^{-1}). U sušnim proizvodnim godinama (2006 i 2007) najviši profit ostvaren je sa primenom 60 do 120 kg ha^{-1}.

Ključne reči: *proizvodnja kukuruza, profitabilnost proizvodnje kukuruza, primena đubriva.*

5   Doc. dr Ljubiša Živanović, Univerzitet u Beogradu, Poljoprivredni fakultet, Nemanjina 6, 11080 Zemun, Srbija, Telefon: +381 64 350 52 49, E-mail: ljuba@agrif.bg.ac.rs

6   Dr Vlado Kovačević, savetnik ministra, Ministarstvo poljoprivrede i zaštite životne sredine Republike Srbije, Nemanjina 22-26, 11000 Beograd, Srbija, Telefon: +381 64 65 81 519, E-mail: vlado.kovacevic@minpolj.gov.rs

7   Mr Vladan Lukić, asistent-tehničar, Univerzitet u Beogradu, Šumarski fakultet, Kneza Višeslava 1, 11000 Beograd, Srbija, Telefon: +381 64 05 05 175, E-mail: vladan.lukic@sfb.bg.ac.rs

EFFICIENCY OF EU FINANCIAL SUPPORT POLICY FOR DEVELOPMENT OF RURAL ENTREPRENEURSHIP IN POLAND[1]

Adam Wasilewski[2]

Summary

The main research objective was to assess the efficiency and effectiveness, in some theoretical approaches considered as a type of efficiency, of EU financial support affecting the entrepreneurship development in rural areas of Poland.

Descriptive and comparative analysis of basic statistics and Gini coefficient as well as the econometric model of absolute beta convergence were applied as e research methods. The analysis utilised the data from Central Statistical Office, Local Data Bank, for 2004-2013 for 1,529 rural counties.

General conclusion of the paper is that EU financial support had a positive and statistically significant impact on local absolute beta convergence. Moreover, the analyses confirmed that the higher level of support from the EU budget accelerates an increase in the number of private enterprises, micro-enterprises and the number of the employees. It also slows down the processes of growth in the number of the unemployed. However this is the short-time effect.

Key words: EU policy, public support, efficiency of allocation, SME development, rural areas.

JEL: D61, Q18

Introduction

The role of development of non-agricultural activities in the rural areas as well as existing barriers and drivers of this development have caused that the issue has become a subject

---

2   Adam Wasilewski, Ph.D., Assistant Professor, Institute of Agriculture and Food Economics – National Research Institute, Swietokrzyska Street no. 20, 00-002 Warsaw, Poland, Phone: +48 22 505 44 19, E-mail: wasilewski@ierigz.waw.pl

of interest, and also the influence of different policies. One example is the policy of the European Union, which, through the use of various instruments, both in the context of regional and structural policy, seeks to promote the development of non-agricultural sectors of the economy. The support of the public sector to the private sector constitutes, however, the state's interference in the functioning of the market. Evaluation of such activities is not clear in the economic literature. On the one hand, it depends on the form of the support, on the other hand on the applied theoretical and methodical approaches. Therefore, the main objective of the research conducted in 2011-2014 was to assess the efficiency of selected instruments of entrepreneurship development in the rural areas, using an objective and multi-criteria approaches.

The studies were focused primarily on the European Union's financial instruments, influencing directly or indirectly the development of non-agricultural activities in the rural areas, which is a result of formation of entrepreneurial attitudes of the population. Application of purposive approach in such cases helped to assess the effectiveness of policies pursued by the European Union, i.e. to determine the degree of achievement of the overarching objective of convergence. The multi-criteria approach enabled to assess the technical efficiency of the transferred support and to determine the theoretical terms of the stability of the achieved results. The starting point of this study was the identification of all the instruments that can be used in the framework of the abovementioned policies to support the development of economic activities. The aim of the proceedings was to justify the fact that only partial assessment of the efficiency of selected instruments is possible. A wide range of instruments and the relation between them, as well as the diversity of theoretical approaches to the effectiveness of the policies make the objective and comprehensive assessment impossible.

Theoretical background

The support for business activity development can be implemented under various policies, defined according to the approach to the issue, the areas of support or the types of instruments used for intervention. However, each case, involves influence by the public sector on the production of private goods and services. The initiated activities also entail defined expenditures for the public-finance sector, which generally causes a reduction in the consumption of public goods. This creates the issue of efficient public fund utilisation, which is closely associated with the type of instrument applied in the support. The type of instrument applied in the support determines both the scale of assumed activities aiming to develop business activity and the scale of limiting the consumption of public goods. The application of defined instruments of support can be substitutive or complementary in relation to the production of public goods. The first case sees a situation where the increased public expenditures for enterprises create a proportional reduction in the expenditures for the production of public goods, while the second case sees the production of public goods as a potential factor in enterprise development.

Due to the aforementioned conditions, the professional literature includes a classification of the instruments supporting the development of enterprises. The broadest depiction distinguishes the following instruments (Gancarczyk, 2010):

- direct – associated with financial transfers or transfers of specific financial services by the public sector to enterprises fulfilling the defined selection criteria;
- indirect – affecting all enterprises through their business environment.

Effectiveness is one of the criteria according to which assessment of the policy is made. Generally, it boils down to determining the degree of accomplishment of a given policy objectives (Krol, 2000; Pawlowski, 2000). In the case of policy to support the development of entrepreneurship, which uses instruments financed from the EU budget, the objective is economic convergence (Monfort, 2008). This results primarily from Regulation 1083/2006 of 12 July 2006, pursuant to which the actions taken by the EU funds should aim to achieve three main objectives, i.e. convergence, regional competitiveness and employment and territorial cooperation. In this regulation, convergence means improving conditions for growth and employment through increasing and improving the quality of investment in physical and human capital, development of innovation and knowledge society, adaptability to economic and social changes, protection and improvement of the environment and increasing administrative efficiency in least developed countries and regions.

The use of different instruments of regional and structural policy by the European Union for the development of entrepreneurship leads to convergence within the meaning of the Regulation. Transfers of funds contribute to the improvement of the situation in the indicated areas both at the national level and at the level of individual regions (Wasilewski 2011). But this is not synonymous with convergence understood in the context of economic theory (Quah, 1996; Solow, 1956; Romer, 1994). In this perspective, convergence is understood broadly as equalizing the level of development of regions (states), (Lazniewska et al., 2011). Bridging the development gap between the regions is thus an evidence of the convergence process, and not only improvement of the economic situation (Steger, 2006). However, the measurements of convergence, meaning the process of approaching the less developed regions to more develop ones in economic terms, use two approaches. In the first one, convergence is evidenced by decreasing differences between the indicators determining the level of economic development, while in the second compares the pace of development or economic growth. In econometric analyses, these two approaches are named respectively σ and β convergence (Bal Domańska, 2011). The choice of a particular type of convergence as a policy goal, however, should be preceded by a preliminary assessment of the potential to achieve each of them, in terms of the given policy.

The research problem concerned, i.e. the "efficiency of regional and structural policy instruments to support the development of entrepreneurship" is quite controversial. The so-formulated problem demonstrates the active involvement of the state in economic processes and refers the concept of "efficiency" to measures undertaken by the state (Stringham, 2001; North, 2005; Weingast, 2005). Such an approach to economic development is criticized in the economic literature, in particular by mainstream representatives. However, active state economic policy is nothing new. Certain economists expressed a need for state intervention in economic processes, at the same time creating a theoretical basis. Mercantilists, who argued in the 17th and 18th century that the state should be closely involved in supporting the development of industry and trade, are a good example (Landreth, Colander, 2005). The

mercantilist concept of the role of the state, however, was strongly criticized by Smith and the followers of his classical approach to the economy (Landreth, Colander, 2005). Such a situation persisted up to the time of Keynes, who used certain concepts of mercantilism to demonstrate the significant role of the state in economic development.

The theory of welfare determines the easiest way for the economy to achieve Pareto efficiency. However, this is only possible under perfect market conditions. In practice, the correct functioning of the market, however, is distorted, which may lead to inefficient trade, production or its structure. These distortions occur due to market failures (Stiglitz, 2004), which include:

- competition failure,
- failure resulting from the existence of public goods,
- failure resulting from externalities,
- market incompleteness,
- asymmetric information,
- unemployment, inflation, imbalance.

In general, the economic literature suggests that any form of intervention, which may also include EU financial support to SMEs, slow down the efficient allocation of resources. Nevertheless, they can be a key driver for economic growth, as was the case in China. In accordance with Murrell (2005), the dual economy model plays such a role. As a matter of fact, the use of different intervention forms strengthens "marginal" efficiency. In relation to the New Institutional Economics, this means a temporary approval for a set of informal rights allowing for sub-marginal production. However, it provides social protection (Coase, 1960) for entities which would lose the most due to reforms, i.e. transition to a purely market economy (Lau et al., 2000). As a matter of fact, the result is a slowdown in the said reallocation, but – according to neo-institutionalists, it allows to gain time to develop protection mechanisms for market transactions. Given the social aspect of the dual economy, it can be said that certain solutions can be applied also in Poland. In fact, the use of such mechanisms is well-founded in the Constitution of the Republic of Poland, which defines the state economic system as a "social market economy". However, assessing policy efficiency in accordance with dual approach criteria would necessitate the determination of a degree to which the policy instrument concerned supports entities which would lose the most in the absence thereof. This in turn implies a need to establish criteria for the classification of entities to a so-called "group of losers".

Methodical approach

The econometric model of β-convergence (Abreu et al., 2005), adapted to the level of a county, was used to identify the processes of local convergence. This approach, in turn, implies the use of specific indicators and the structure of the analysis. The analysis of the convergence of regions and countries adopts the level of GDP or GDP per employee

as a measure of the level of development. At the local level (county), such measures, unfortunately, cannot be applied. Therefore, assessment of the level of development of counties, and then the processes of equalization of these levels, uses the level of own income[3] of the county per 1 inhabitant of working age. It should be noted that the size of this category of income is quite often used in research on local development. It is the function of income obtained in the county, such as income of individuals, legal persons or income on their property or land. These revenues are therefore a function of income received from all factors of production located in the unit.

The initial stage of the study involved descriptive and comparative analysis of the state and changes in rural counties' own income in various systems determined by the level of this income category and the scale of the use of instruments to support the development of entrepreneurship financed from the budget of the European Union. The next stage was to analyze the size of own income depending on the amount of funds received in the county from the budget of the European Union under the Operational Programme Human Capital, Innovative Economy, the Regional Operational Programme and the Programme Development of Eastern Poland, per one worker of working age. As part of these programmes, many activities could be classified as direct or indirect instruments to support entrepreneurship in rural areas. In this case, the median size was also used as a criterion of the grouping.

The next stage of the research was to analyze the Gini coefficients, which are used to determine the level of diversity of objects in the population in terms of specific characteristics. The purpose of these coefficients was to increase knowledge about the process of local development and verification of the results of the analysis of basic statistics characterizing changes in own income per one inhabitant of working age.

The efficiency of regional and structural policy instruments to support the development of non-agricultural economic activities was assessed in respect of financial transfers from the EU budget through the Regional Operational Program (ROP), Innovative Economy Operational Program (IEOP), Human Capital Operational Program (HCOP) and others. While assessing the efficiency of financial support, both direct and indirect non-refundable support, which influenced the development of SMEs, was examined. Furthermore, the assessment of these instruments received by far the most attention in the study. However, such an approach was taken, because the EU budgetary period had finished, thus a need to assess the effects of the policy pursued in various aspects. The study of efficiency involved descriptive and comparative analysis of the state and changes of private and micro-enterprise number in rural counties' in various aspects determined by the scale of EU financial support for the development of entrepreneurship. The analysis is also focused on the relationships between this support and the employment and unemployment in rural counties. The criterion for grouping was the median and quartile value of the support per one inhabitant in working age. Finally the correlation and simple regression analysis were

---

3   The incomes and public support were expressed in Polish złoty (PLN). The exchange rate is about 4.2 PLN for 1 EUR

utilized for the assessment of the impact of financial support scale on the county budget revenues and creation of new businesses and jobs.

The above analyses use the data from Central Statistical Office (CSO), Local Data Bank, for 2004-2013 for 1,529 rural counties. The population of this group of counties was without the units with own income in excess of the average value of income by more than 3 standard deviations. These were mainly counties obtaining substantial income from compensation for mining damage and those of typical tourist profile.

Effectiveness of EU financial support – aspect of local convergence

In the study period, i.e. in 2004-2011, the nominal own incomes per 1 inhabitant showed an upward trend. The break in the trend occurred in 2009, which was associated with the financial crisis in Europe. However, in the next two years after the collapse there was again an increase in income. In this context, it can be concluded that both the market conditions, as well as state-led policies were conducive to the development of rural areas and contributed to the relatively rapid overcoming of the negative effects of the financial crisis. The observed trends and the course of changes in the level of own income are therefore prerequisite to finding that the policy pursued to support the development of entrepreneurship, including based on various instruments financed by the European Union, does not contribute to equating the level and pace of development at the local level. However, one should note that this process of equating the development in the local system does not have to be the goal of this policy. In addition, slower income growth for low-income counties can be explained in the context of the Williamson's hypothesis (Williamson 1965). According to it, they still have not reached a certain level of economic development to significantly accelerate the rate of development.

Considering the impact of the measures from the budget of the European Union on local economic development, one should pay attention to changes in own income of counties in groups differing in terms of the level of absorption of these measures by the local community[4] (Figure 1). Launching in 2007 of new programmes created quite wide possibilities for people to establish new businesses and extend existing businesses. However, the European Commission introduced the need to engage own capital as a condition of assistance. As a result, larger scale of the use of funds was in counties receiving higher own income in the period 2004-2007 (Figure 1), i.e. in units where people and businesses obtained higher incomes. In other words, entities had greater opportunities to engage own funds in establishing or developing business ventures. However, by 2007, own income of both groups of counties steadily increased, and the difference in nominal terms remained at a constant level. Since 2008, i.e. almost from the start of the programmes, counties with greater use of EU aid begun to obtain more and more advantage in terms of their incomes. At the same time there was a smaller decrease in their income as a result of the financial crisis. It can therefore be assumed that the scale of EU support had a significant positive impact on own income of rural counties. However, the use of various support programmes

---

4   The criterion was the median of income obtained in individual counties from operational programmes referred to in the methodical chapter, calculated per 1 inhabitant of working age.

did not initiate the process of equating income of counties and even lead to increase in differences at the local level. Changing the criteria for the distribution of the support measures could counteract the increasing differences in the pace of economic development of counties. However, one must bear in mind other barriers to economic development when taking this type of action. Administrative increase in allocation of funds to units with lower incomes may lead to a significant reduction in the efficiency of support due to the presence of these barriers. On the basis of changes in own income, one can also draw a preliminary conclusion that the possibility of closing the gap in local development in rural areas with the help of existing policy instruments to promote entrepreneurship is generally very limited, or even non-existing. This does not undermine earlier claims regarding the positive impact of these instruments on the income received regardless of its initial level.

Coefficients of variation of own income of counties takes large values in both the group with low and a relatively high use of EU funds (Figure 2). Higher levels of internal diversity, however, are characteristic of the group with a high level of use of these resources. Since 2005, changes in diversification of counties are similar in both groups. However, in recent years there has been a much greater increase in income volatility in the group of counties with high levels of use of EU funds. One can say with high probability that this was the effect of isolating the group of counties with high incomes as a result of, *inter alia*, the impact of EU support. However, the analysis of counties diversification depending on the level of this support does not confirm the process of aligning the pace of local development.

Figure 1. Own income of rural counties in 2004-2011, by groups differed in terms of the use of EU funds under operational programmes involving support for the development of entrepreneurship.
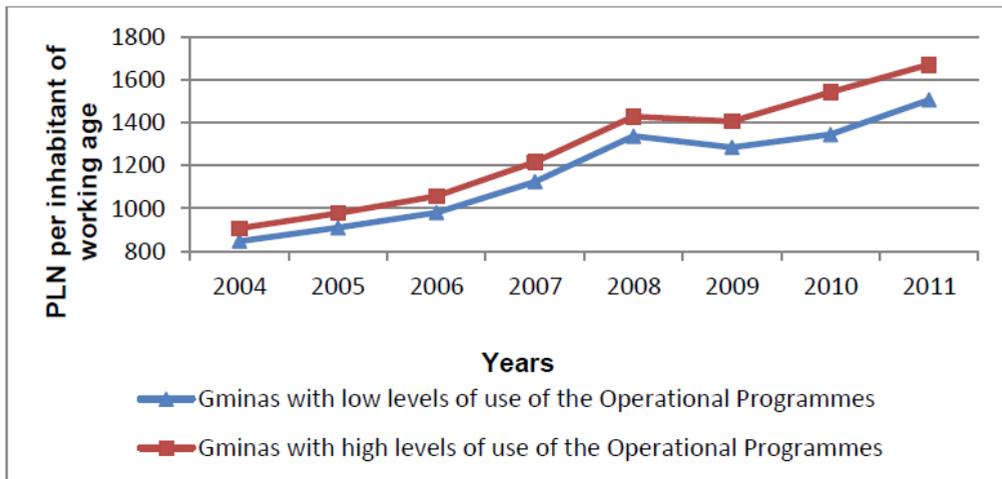
Source: own calculation based on data from CSO Local Data Bank.

Figure 2. Coefficients of own income diversification in rural counties in 2004-2011, by groups differed in terms of the use of EU funds under operational programmes involving support for the development of entrepreneurship.
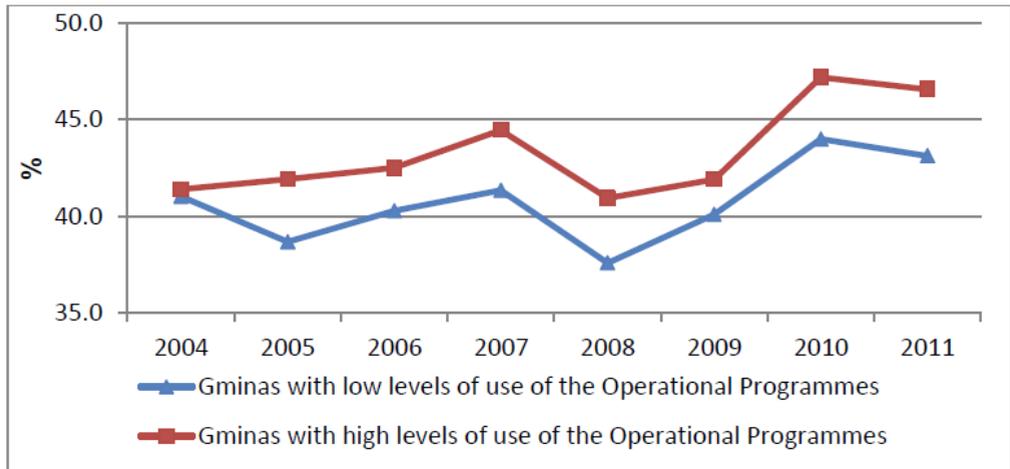
Source: own calculation based on data from CSO Local Data Bank.

The analyses of diversification of own income of counties do not give a complete picture of occurring changes. The results in many cases led to conclusions of a fairly large or fairly high diversity of own income of counties per 1 inhabitant. These concepts in case of analysis of basic statistics are, however, relative and subjective in nature. In order to objectify the results we used Gini coefficients to assess income diversification of counties per 1 inhabitant of working age, as a measure of local economic development and, changes of this diversification. This will also allow verification of the previously obtained results.

Changes and relationships of Gini indices in groups of counties diversified in terms of the level of use of EU funds by the local community (Figure 3) were similar to the case of coefficients of variation for the income of these groups. Both groups showed a slight upward trend of the coefficient, which means widening the gap of income regardless of the level of support used. However, counties with higher use of those funds were also characterized by higher level of the Gini coefficient in the corresponding period, i.e. they were more diverse in terms of their income. Analysis of changes in the Gini coefficient confirms the lack of impact of the EU funds absorbed by the local community on bridging the differences in the level of local development. These measures affect rather the widening of the gap. One can also say that they favour particularly the development of the most developed counties. However, taking into account the relatively low level of Gini coefficients and widening of the gap, one should confirm the thesis formulated earlier that a significant portion of the underdeveloped rural counties have not yet reached an adequate level of development in order to effectively use public support to significantly accelerate the rate of growth.

Figure 3. Gini indices for own income per inhabitant of working age in rural counties in 2004-2011, by groups differing in terms of the use of EU funds under operational programmes involving support for the development of entrepreneurship.
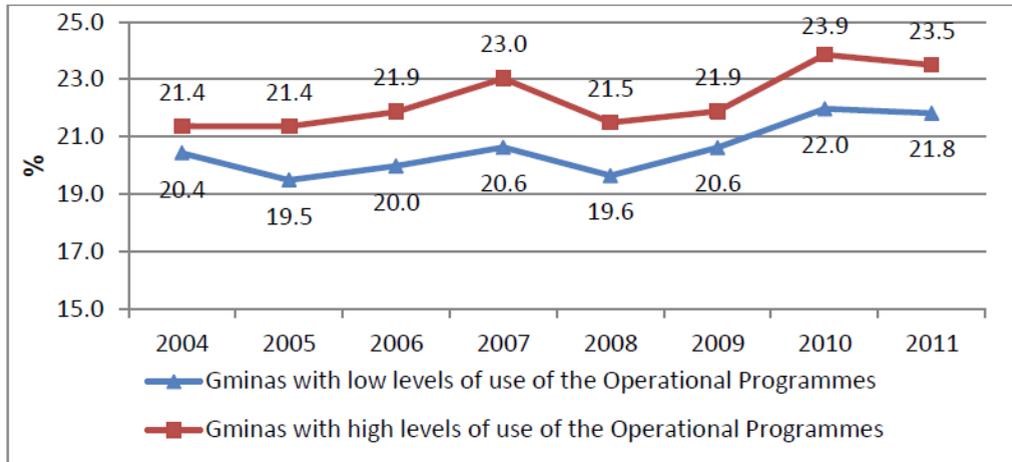
Source: own calculation based on data from CSO Local Data Bank.

Analysis of basic statistics and Gini indices for own income confirms the diversification of rural counties and the deepening of existing differences associated with the isolation of a group of counties with high incomes and a higher rate of growth. The relatively low values of the Gini coefficient show, however, that the variation is not too large. If one also takes into account the lack of a clear acceleration of the rate of development in the least developed counties, it can be concluded that a significant proportion of counties has not yet reached the critical level of development, beyond which the rate will significantly increase. The structural and regional policy, focused on the use of financial instruments, has no positive impact on reducing inequalities in local development. However, this does not mean the absence of a positive effect on income growth and slowing down the rise of differences.

The analysis of basic statistics and the Gini indices does not give a complete picture of the process of aligning the level and pace of development of counties. It is rather an analysis of differentiation, based on which one can define some rationale of this process. In order to verify or rather extend the results obtained, a method of unconditional beta convergence has been used. This method allows determining whether the counties with low levels of income are catching up in terms of their growth with counties with higher income and determine the time in which the existing differences will be reduced by half. Analysis of changes in own income, carried out by the unconditional beta convergence shows that the phenomenon occurs of local convergence among counties – determined based on changes in own income.

Table 1. The results of the regression analysis for the unconditional beta convergence for own income per inhabitant of working age (2004-2011) by groups differing in terms of the use of EU funds under operational programmes involving support the development of entrepreneurship.

Specification	Value of regression coefficient	Standard error	P-value	Level of significance
Counties with low levels of use of Operational Programmes				
ln (DW)it-1	0.31782	0.070902	7.38E-06	0.01
# observation	3825			
AR(2)	-0.6956774		0.24332	
Sargan test	50.51734		5.00E-06	
Counties with high levels of use of Operational Programmes				
ln (DW)it-1	0.416062	0.081761	3.61E-07	0.01
# observation	3820			
AR(2)	0.5279689		0.29876	
Sargan test	56.5419		4.70E-07	

Source: calculation of Marcin Gospodarowicz (Wasilewski, 2013) based on data from CSO Local Data Bank.

The impact of regional and structural policy on processes of aligning counties in terms of economic development is highlighted by the results obtained from the model of unconditional beta convergence for groups of counties differing in terms of the level of absorption of the different EU funds aimed at the development of entrepreneurship (Table 1 and Table 2). The analysis shows that convergence process occurred regardless of the level of funds obtained from the European Union. The group of counties with high absorption rate achieved the rate of convergence at nearly 5% per year, which was 1 percentage point higher than in counties with small-scale use of these funds. Moreover, in this group, the period of halving the distance to the long-term equilibrium state was less than 14 years and was shorter by more than 3.5 years than in counties with low levels of absorption. This means that the higher level of financial support in the framework of the policies has a significant impact on the rate of convergence, in conditions of increasing diversity.

Table 2. Rate of unconditional convergence of type β and the period of halving the difference in own income in 2004-2011, by groups differing in terms of the use of EU funds under operational programmes involving support the development of entrepreneurship.

Specification	Beta-convergence coefficient	Half-life
Counties with low levels of use of Operational Programmes	0.0394	17.6
Counties with high levels of use of Operational Programmes	0.0497	13.9

Source: calculation of Marcin Gospodarowicz (Wasilewski, 2013) based on data from CSO Local Data Bank.

Local efficiency of financial support from the EU budget at the local level

The chapter on methodology indicates that research covered 1,529 rural counties. In 2007-2013, these counties received about PLN 13.1 billion within the framework of different projects under, among others, the Regional Operational Programmes (ROP), the Human Capital Operational Programme (HCOP), the Innovative Economy Operational Programme (IEOP). Most of the funds, however, were transferred under the Regional Operational Programmes. Nearly 63% of the total EU budget designated for the analysed rural areas was spent on measures under these programmes, which included both direct and indirect support for the development of economic activities within the framework of infrastructure projects.

Research shows that each county received nearly PLN 1.9 thousand per capita of working-age population on average. However, the median value was below PLN 1.1 thousand, meaning that the vast majority of counties received support below the average for these areas. 25% of the examined counties obtained less than PLN 492 per capita of working-age population, and further 25% of counties – above PLN 2.2 thousand, i.e. slightly more than the average. Undoubtedly, the received financial assistance varied significantly, which is proved by the coefficient of variation that reached 251%.

While analysing an increase in the absolute number of economic entities in county groups with different levels of financial support (Figure 4), it can be concluded that the relative level of financial transfers from the EU budget played an important role in launching economic activities by physical persons. In 2007-2013, i.e. the effective period of the financial instruments concerned, a larger increase in the number of economic entities was observed in county groups with a greater level of support. Quartiles 1 and 4 are significantly different. Throughout the effective period of support, the number of these entities in the latter increased by as much as 6 percentage points more. At the same time, it should be noted that the number of economic entities grew more in county groups, in which the initial number of the entities was higher. Having regard to the increase in the number of private economic entities, EU financial support can be considered as a quite efficient instrument. Nevertheless, despite the positive impact on the development of economic activities, further financial support under the same conditions can lead to excessive diversity in the development of economic activities between rural areas.

Similar relations, as in the case of private economic entities, were observed between an increase in the number of micro-enterprises and the level of EU financial support. However, due to data availability, the analysis covered 2009-2013 in this case. Thus, the period began with the year which brought the break in the upward trend in the number of entities due to the financial crisis. However, the number of entities grew much more in county groups with medium-high and high levels of support (Figure 4). Nonetheless, the difference in the growth between extreme, in terms of the level of support, county groups was only 2.1 percentage points. At the same time, it should be noted that the smallest growth in the number of micro-enterprises was not observed in county groups with the lowest level of support, but rather in those with medium-low support (quartile 2). The growth in the number of micro-enterprises in 2009-2013 slightly accelerated their average annual growth

rate, as opposed to private enterprises. Nevertheless, having analysed this indicator, it can be stated that it is a rapidly developing sector, especially with financial support from the EU budget.

Among others, EU policy aimed at increasing employment and reducing unemployment. When assessing the efficiency of financial support, changes caused in rural areas in these fields must therefore be taken into account. Trends in employment changes were quite similar in nature to changes in the development of economic activities in the areas concerned. In 2007-2012, the share of the employed in the total number of working-age population decreased. However, in absolute terms, employment in rural areas increased by 10.7% (Figure 4). This employment growth was observed in all county groups, regardless of the level of support. Nevertheless, it was greater in counties with a higher level of EU support. Research shows that the difference between extreme, in terms of the relative level of support, county groups was as much as 11 percentage points, meaning that public funds were a relatively strong driving force for the recruitment of new staff, although they were insufficient to create conditions, in which these growing labour resources would be fully utilised. It should also be emphasised that the fastest growth in employment was observed in counties, in which its level was higher. In view of the above, it can be concluded that the diversity of rural areas in terms of the utilisation of labour resources increases. Nonetheless, the criteria used to distribute public financial support foster a kind of rural economic polarisation.

During Poland's membership in the European Union, two characteristic periods in unemployment changes can also be distinguished. In 2004-2008, there was a systematic and quite dynamic drop in the share of the unemployed in the total number of working-age rural population. In 2009, the financial crisis brought the upward trend that lasted until 2013. The unemployment rate increased relatively in all counties, regardless of the level of the support obtained from the EU budget. Unemployment growth in the effective period of the said policy instruments was observed not only in relative, but also in absolute terms (Figure 4). Nevertheless, changes in the number of the unemployed were in line with the share of the unemployed in the total number of working-age population, since a high level of support slowed down unemployment growth. In the period concerned, the number of the unemployed increased by 1 percentage point less in counties with the highest level of support than in counties in which this support reached the lowest level and by nearly 4 percentage points less than in counties with medium-high support. Unfortunately, a significant slowdown in unemployment growth is not observed in the case of the lower level of financial transfers from the EU budget.

Figure 4. Change in local economic in county groups with different levels of EU support per capita of working-age population
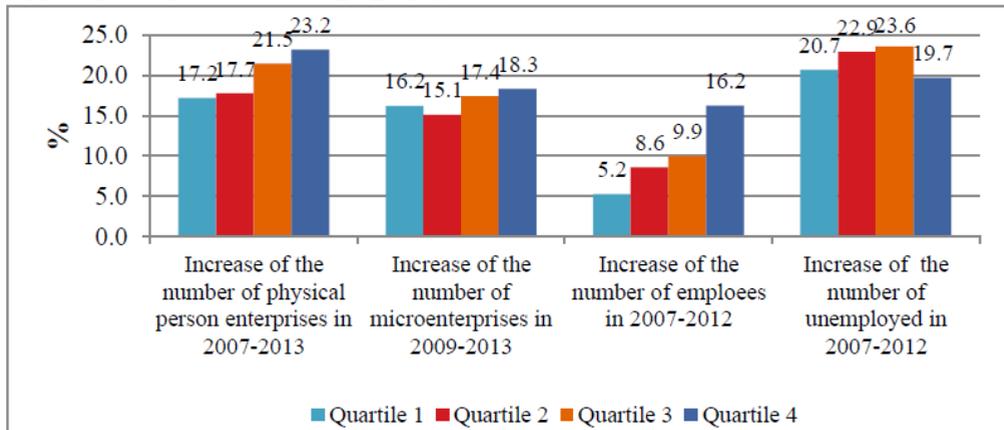
Source: Own calculations based on CSO data.

Summary and conclusions

The structural and regional policies focused on the use of financial instruments have no positive impact on reducing inequalities in local development. This conclusion follows from the analysis of basic statistics and Gini indices. It acknowledges the increase in diversity of counties in terms of economic development, regardless of the instruments used. Studies have confirmed to some extent, somewhat different effects of individual instruments on the differentiation of the pace of development. The results provide evidence for a thesis that the funds transferred under programmes involving direct and indirect support for enterprises contribute to accelerating the widening of the gap in local development.

The growing diversity of counties in terms of the level of development, determined on the basis of the analysis of basic statistics and Gini coefficients, does not mean the absence of the process of reaching the state of long-term equilibrium by counties with lower levels of development. This way, the process of aligning the territorial units in terms of the pace of development and economic growth is accounted for in the statistical models of unconditional beta convergence. The analyses conducted with this method show in turn, that there is a process of local convergence among rural counties, measured by own revenues of counties per inhabitant of working age.

In view of the existing economic theories, the fully positive assessment of the efficiency of public financial support can be justified only if these funds are used for purposes related to the development of technical and social infrastructure. However, there are different opinions on funds directly supporting enterprises in their day-to-day operations and investment activities. This instrument is in fact considered as a form of state interventionism, which can destroy free competition, thus destabilizing the market. However, this is the case when subsidies cause a drop in the prices of products manufactured by an enterprise. In accordance with certain economists, intervention instruments have rather short-term effects at the macro level.

In their opinion, if public funds do not reach the most efficient entities, the market in the long run will make corrections and efficiently allocate resources.

However, based on empirical research on the impact of EU funds, which can be classified as instruments to directly or indirectly support the development of entrepreneurship in rural areas in 2007-2013, on economic processes, it is difficult to set a timeframe within which they will be reallocated to the most efficient entities. As a point of fact, they bring both measurable and positive economic effects in the current period. Analyses show that the higher level of support from the EU budget accelerates an increase in the number of private enterprises, micro-enterprises and the number of the employees. Moreover, it slows down the processes of growth in the number of the unemployed.

However, the existing relations in question should not allow the conclusion to be drawn that a significant economic improvement in rural areas can only be achieved as a result of a significant increase in the level of support, since it is impossible in practice due to budgetary constraints existing at both EU and national levels. However, the presence of statistically significant relations proves the efficiency of the instrument concerned. It can therefore be applied to support small-scale development projects in relation to the least economically developed areas if such an economic development concept is pursued.

When considering the possibility of using public financial support as an instrument for rural economic development, certain negative aspects should be kept in mind. In 2007-2013, relatively higher financial resources were transferred to more economically developed municipalities. Although they had positive effects, i.e. they accelerated economic development, their distribution under the same conditions can lead to the further diversification of rural municipalities in terms of the level of development. Thus, the distribution criteria applied neither foster the implementation of balanced rural development, nor promote bridging the gap in this development. However, they can be retained if another national development concept is pursued, such as establishing the so-called central units or growth poles. What is more, the positive effects of public financial support can be observed in the short term, i.e. during the period of transfer. In accordance with the existing theory, their positive impact on the local economic situation is supposed to weaken in the long run. Having ceased the use of this form of assistance, other instruments under policy to support the development of entrepreneurship are to play a greater role. In this case, fiscal policy and reduced bureaucracy can gain importance.

Literature

1. Abreu, M., de Groot, H., Florax, M. (2005): *A Meta-Analysis of β-Convergence: the Legendary 2%*, Journal of Economic Surveys, Wiley Blackwell, vol. 19, no. 3, pp. 389-420.

2. Bal Domanska, B. (2011): *Ekonometryczna identyfikacja β konwergencji regionow szczebla NUTS-2 państw Unii Europejskiej,* Acta Universitatis Lodziensis, Folia Oeconomica, no. 253, pp. 9, University of Lodz, Lodz.

3. Coase, R. (1960): *The problem of social cost,* Journal of Law and Economics, vol. 3, no. 1, pp. 1-44.

4. Gancarczyk, M. (2010): *Wsparcie publiczne dla MSP,* Podstawy teoretyczne a praktyka gospodarcza, C. H. Beck, Warszawa.

5. Krol, M. (2000): *Kierunki oddziaływania uwarunkowan na cele i srodki polityki zatrudnienia,* Polityka Gospodarcza, no. 3, pp. 43-50.

6. Landreth, H., Colander, D. (2005): *Historia Mysli Ekonomicznej,* PWN, Warszawa, pp. 58-63.

7. Lau, L., Quian, Y., Roland, G. (2000): *Reform Without Losers: An Interpretation of China's Dual-Track Approach to Transition,* Journal of Political Economy, vol. 108, no. 1, pp. 120-143.

8. Lazniewska, E., Gorecki, T., Chmielewski, R. (2011): *Konwergencja regionalna,* Wydawnictwo Uniwersytetu Ekonomicznego w Poznaniu, Poznan.

9. *Local Data Bank of the Central Statistical Office*, Central Statistical Office of Poland, Warsaw, information portal, available at: www.stat.gov.pl

10. Monfort, P. (2008): *Convergence of EU regions Measures and Evolution*, Working papers 1/2018, A series of short papers on regional research and indicators produced by the Directorate-General for Regional Policy, European Commission, Brussels, pp. 1-20.

11. Murrell, P. (2005): *Institutions and Firms in Transition Economies,* in: Menard, C., Shirley, M. (Edts.) Handbook of New Institutional Economics, Springer, Dordrecht, Berlin, Heidelberg, New York, pp. 688-690.

12. North, D. (2005): *Institutions and the performance of economies over time*, in: Menard, C., Shirley, M. (Edts.) Handbook of New Institutional Economics, Springer, Dordrecht, Berlin, Heidelberg, New York, pp. 22-23.

13. Pawłowski, G. (2000): *Wykorzystanie analizy efektywności funkcjonowania instytucji publicznych w aspekcie konkurencyjności regionów,* Polityka Gospodarcza, no. 3, pp. 65-71.

14. Quah, D. (1996): *Twin Peaks: Growth and Convergence in Models of Distribution Dynamics*, Economic Journal, Royal Economic Society, vol. 106, no. 437, pp. 1045-55.

15. Romer, P. (1994): *The Origins of Endogenous Growth*, Journal of Economic Perspectives, American Economic Association, vol. 8, no. 1, pp. 3-22.

16. Solow, R. (1956): *A contribution to the theory of economic growth*, The Quarterly Journal of Economics, vol. 70, no. 1, pp. 65-94.

17. Steger, T. (2006): *On the Mechanics of Economic Convergence*, German Economic Review, vol. 7, no. 3, pp. 317–337.

18. Stiglitz, J. E. (2004): *Ekonomia sektora publicznego,* PWN, Warszawa.

19. Stringham, E. (2001): *Kaldor-Hicks Efficiency and the Problem of Central Planning,* the Quarterly Journal of Austrian Economics, vol. 4, no. 2, pp. 42.

20. Wasilewski, A. (Ed.), (2011): *Instrumenty polityki regionalnej i strukturalnej wspierajace rozwoj przedsiebiorczosci na obszarach wiejskich,* Prace Programu Wieloletniego, no. 14, IAFE-NRI, Warszawa.

21. Wasilewski, A. (Ed.), (2013): *Skuteczność instrumentów polityki regionalnej i strukturalnej oddziałujących na rozwój przedsiębiorczości,* Prace Programu Wieloletniego, no. 77, IAFE-NRI, Warszawa, pp. 46-47.

22. Weingast, B. (2005): *The performance and stability of federalism: an institutional perspective,* in: Menard, C., Shirley, M. (Edts.) Handbook of New Institutional Economics, Springer, Dordrecht, Berlin, Heidelberg, New York, pp. 152-156.

23. Williamson, J. (1965): *Regional inequality and process of national development: a description of the patterns,* Economic development and cultural change, vol. 13, no. 4, part II, pp. 1-84, University of Chicago press.

COMPARATIVE ANALYSIS OF THE NUMBER OF SHEEP IN FYR AND SOME EUROPEAN COUNTRIES[1]

Slavica Arsić[2], Marijana Jovanović[3], Zorica Sredojević[4]

Summary

Sheep farming in Serbia, from year to year, notices a descending course in number of sheep, as well as in production of milk and meat. The main objective of this paper is the analysis of the number of sheep in Serbia and the surrounding countries (FYR).

By comparing the current state of the total number of sheep (in 2011) with the state in the former Yugoslavia, the result shown is that there are 66% less sheep in Serbia compared to the total number seen in 1967 (base year). Compared to the last census from 2012, there is an increased number of sheep in Serbia, compared to previous year (2011) by 18.4%.

Other former Yugoslav republics (FYR) also have a decrease in the total number of sheep: in Bosnia and Herzegovina by 76.5%, in Montenegro by 64.3%, in Croatia by 41.3%, in Macedonia by 63.5% compared to 1967 (base year), except for Slovenia, which has an increase in the total number of sheep by 83,000 head of cattle.

In paper is given overview of the number of sheep for some European countries and for some part of world, in purpose of comparison with sheep state in FYR.

Key words*: sheep, former Yugoslavian republics (FYR), Europe, world.*

JEL: *Q10, Q19, P50*

---

2 Slavica Arsić, M.A., Research Assistant, Institute of Agricultural Economics, Volgina Street no. 15, 11060 Belgrade, Serbia, Phone: + 381 11 69 72 852, E-mail: slavica_a@iep.bg.ac.rs

3 Marijana Jovanović, B.Sc., Research Assistant, Institute of Agricultural Economics, Volgina Street no. 15, 11060 Belgrade, Serbia, Phone: +381 11 69 72 842, E-mail: marijana_j@iep.bg.ac.rs

4 Zorica Sredojević, Ph.D., Full Professor, University of Belgrade, Faculty of Agriculture, Institute for agroeconomy, Nemanjina Street no. 6, 11080 Zemun, Serbia, Phone: +381 11 2615 315/int 297, E-mail: zokas@agrif.bg.ac.rs

Introduction

Regional sheep breeds are important for the social and economic structure of rural communities in their locality, and local knowledge of livestock is recognized as an essential contributor to both economic and environmental sustainability (Tempelman, Cardellino, 2007). Regional sheep breeds have evolved in and have become adapted to their environments, often thriving under extreme and stressful conditions. These breeds may therefore have unique characteristics providing a valuable resource of genetic variation. This variation is essential both to develop sustainable animal production systems and to mitigate against unpredictable future events. Unlike goat breeding, which has been prohibited on the territory of ex-Yugoslavia since 1948, when the Law on goat breeding prohibition (except for white goats, whose breeding was allowed under certain conditions) was passed, due to damages they caused in forest areas; sheep breeding has been allowed on the entire territory of ex-SFRY (Cecić et al., 2007). Because of that, sheep breeding was one of the basic sources of the population existence in hilly-mountain areas until the mid-sixties of the XX century.

The capability of sheep to live and reproduce on soil not suitable for other types of agricultural production makes this species of domestic animals significant in world and Serbian agriculture. They are typical pasture animals, as they can spend 7-8 months a year on pastures. Seventy percent of nutrients they need, they get from quality grazing, which is important in terms of cost-effectiveness in their breeding. In the developed countries, growers are especially encouraged to keep their sheep on pastures, and in that way contribute to the ecosystem preservation and prevention of the development of weeds. Also, one shouldn't forget that ruminants (sheep) exploit bulky food very well, which can be produced in large quantities in crop production and which can be very different, starting with those that are produced specially, to those that are obtained as by-products of crop production and processing (Arsić et al., 2013).

Sheep breeding is very profitable, because investment is low and the products of it are highly valued and sought after in the market (Sredojević, Popović, 2014).

Native breeds of farm animals represent an important resource, from the perspective of their genetics and their contributions to environmental and economic sustainability (Ruane, 2000). Native livestock breeds play a central role in low input extensive farming systems and in supporting rural communities in both the developed and developing nations of the world (Drucker et al., 2001). No matter what we possess in natural resources and tradition, sheep breeding in Serbia, in terms of productivity, occupies an undesirable position.

The largest part the population of our sheep makes pramenka (80%) of which the most common strains in Serbia are: pirot, sjenica and svrljiška, while the remaining 20% are cigaja (5%) and crossbreeds of pramenka with foreign races (15%), primarily with virtenberg and ill d' France. Sheep production holds the fourth place in the

Serbian livestock by head, with an average number of 1.5 – 1.6 million heads (Arsić et al., 2012).

According to the last census from 2012 in the Republic of Serbia, out of the total number of sheep, 1,712,036 heads of sheep are located at family households (99%) and only 17,242 animals are in commercial companies and cooperatives, representing just 1%.

The biggest grower of sheep in the world is China, which based on FAO data has 136 million sheep. The number of sheep, by continents for 2009, was: Africa: 297.12 million; Asia: 452.6 million; Australia: 105.12 million (only Australia and New Zealand – without other parts of Oceania); Europe: 131.2 million; South America: 72.4 million (without some parts of Middle America) and North America: 65.7 million (without some parts of Middle America). The total number of sheep estimated in the world is 1.08 billion (FAO, 2009).

Material and Method

The paper will present an analysis of the state of the total number of sheep in Serbia and other former Yugoslav republics, as well as the movement of the total number of sheep in the European countries with the highest percentage of sheep heads. Comparative analysis will be focused on the movement of the total sheep every ten years in the forty-five years period at the situation in the former Yugoslavia, with the following taken as base years: 1967, 1977, 1987, 1997, and 2007, as well as movement of sheep numbers in a continuous period from 2007 to 2011.

There will also be calculated a percentage of the number of sheep in individual Republics of the former Yugoslavia as well as their numerical strength to the surface of the land, the total agricultural area, numbers of sheep in the state compared to 1,000 inhabitants, and their share in the total number of sheep in Europe and in world production.

The main data sources used to achieve the stated goals were published in the following statistical yearbooks: Statistical Yearbook of Serbia, Croatia, Slovenia, Bosnia, Montenegro and Macedonia. From these publications stem the statistically analyzed data for a certain year. In addition, we have used the published material from relevant institutions from Serbia, data from the Food and Agriculture Organization (FAO) and numerous scientific and professional publications. The collected data is presented through tables and graphs analyzed by standard mathematical methods.

Results and Discussion

The movement of the total number of sheep in Serbia and FYR

From 1931 to 1968, with some fluctuations, the number of sheep in Yugoslavia generally held about 10-11 million head. In the sixties, former Yugoslavia occupied the fourth place in Europe in sheep breeding, behind the UK, Spain and Romania, because Serbia

had 4.3 to 4.8 million heads of sheep. As for the other Yugoslav republics during the period of the sixties (in **1967**), total number of sheep was moving in Macedonia and Bosnia and Herzegovina from 2 to 2.2 million heads; Croatia around 1 – 1.1 million head; Montenegro 600 thousand and 37 thousand sheep in Slovenia (FSO, 1968).

In the seventies (**1977**), total number of sheep was: Serbia 2,733 thousand head of sheep, which is 36.4% less compared to 1967. As for the rest of the Republics: in Bosnia there were 1,523 thousand or 31.1% less sheep; in Macedonia 1,865 thousand or 11.3% less; in Croatia 801 thousand sheep – a decrease by 26.5%; in Montenegro 547 thousand head of sheep less, which is lower by 6.4% and in Slovenia 15 thousand head of sheep less, where for 10 years there has been the greatest decrease in the total number of sheep by about 60% compared to in 1967 (FSO, 1977).

In the eighties (**1987**) there also occurs a decrease in the total number of sheep in Serbia and all the Yugoslav republics when the fund of sheep almost halved in comparison to **1967**. Compared to in **1977**, there are smaller fluctuations in the decline of the total number of sheep: in Serbia by 1.3%; in Bosnia and Herzegovina by 6%; in Montenegro by 10.2%; in Croatia by 9.9%. However, in Macedonia and Slovenia there is an increase in sheep heads: for Macedonia that increases is 34.2% and 66.6% for Slovenia (FSO, 1988).

If we compare **1997** to 1987, we get a result that shows that decrease in total sheep number in Serbia is 21.2%; in Bosnia and Herzegovina we find the greatest decrease in sheep heads (83.5%); in Montenegro by 10.2%; in Croatia by 37.3%; in Slovenia by 8% and in Macedonia by 47.5% (SORS, 1998; FSO, 1988; SURS, 2013; FOS, 2011; SBC, 2012a, 2012b; MONSTAT, 2011; SSORM, 2012).

The trend of decreasing continues with bigger or smaller fluctuations in the nineties until **2000** when Serbia had 1,611 thousand heads of sheep. In the other former Yugoslav republics, the total numbers of sheep in 2000 were: in Croatia 528,000 sheep heads; in Bosnia and Herzegovina 311,206 sheep heads; in Montenegro 306 thousand; in Macedonia 1,251 thousand and in Slovenia 98,227 sheep heads. Slovenia had the biggest increase of sheep heads in 2000 compared to the previous year (1999), when it had a little bit over 40 thousand sheep. However, if we compare the total number of sheep in the ten-year period (1997-2007), the decrease in the number of sheep in Serbia was by 24.5%; in Montenegro by 49.4% and in Macedonia by 37.8%. The biggest increase is in Slovenia by 108,180 head of sheep, followed by Bosnia and Herzegovina with 131% or 312,490 head of sheep and Croatia by 42.6% or by 193 thousand heads of sheep (Table 1).

Table 1. The number of sheep in Serbia and the former Yugoslav Republic

Total number of sheep (in 000 heads)							
Year	Serbia	Bosnia and Herzegovina	Montenegro	Croatia	Slovenia	Macedonia	SFRY*
1967	4,307	2,211	584	1.089	37	2,101	10,329
1977	2,733	1,523	547	801	15	1,865	7,484
1987	2,698	1,432	489	722	25	2,503	7,869
1997	2,127	237	439	453	23	1,315	4,594
2000	1,611	311	306	528	96	1,251	4,103
2007	1,606	549	222	646	131	817	3,971
2008	1,605	533	209	643	138	816	3,944
2009	1,504	534	199	619	138	755	3,749
2010	1,475	519	198	630	130	778	3,730
2011	1,460	519	208	639	120	767	3,713
Average 2007-2011	**1,530**	**530.8**	**207.2**	**635.4**	**131.4**	**786.6**	**3,830.4**

Source: FSO, 1968, 1978, 1988; SORS, 1998, 2001; SURS, 2013; FOS, 2011; SORS, 2014; SBC, 2012a, 2012b; MONSTAT, 2011; SSORM, 2012.

Note: * Since 1991 SFRY have not existed, so calculation from 1997 – 2011 represents sum of individual republics of former SFRY.

In 2007 (compared to 2000), there is an increase in Slovenia by 36.3%; in Bosnia and Herzegovina by 22.3%. As for other republics, there is a reduction of the total number of sheep, so that the largest decrease is in Macedonia in 2007, compared to 2000 by 34.7%; in Montenegro by 12.8%; while in Serbia it is lowest at 0.3%. In Serbia in 2006, there were 3.4% less sheep compared to 2000. However, in 2007, there was an increase compared to 2006, by 3.2% (SORS, 2012).

Continuous movement of sheep number in Serbia, the surroundings and the world

If 2007 is taken as the base year for the period until 2012, we get results that indicate that in **2008** there is the greatest decrease in the total number of sheep: in Montenegro (5.8%) and in Bosnia and Herzegovina (3%), while in Macedonia, Serbia and Croatia, the reduction was minimal and ranged from 0.1 to 0.5%. The largest increase in the total number of sheep in 2008 (compared to 2007) is recorded in Slovenia and it amounts 5.9%.

In **2009** in comparison with 2007 an increase exists only in Slovenia (5.3%), while in the other former Republics there is a noticeable decrease in the total number of sheep: in Montenegro by 10.11%, in Macedonia by 7.6%, in Serbia by 6.4%; in Croatia by 4.2% and in Bosnia and Herzegovina by 2.8%

The total sheep number in **2010,** compared to 2007: in all Republics, there is a noticeable trend of decreasing, which is the highest in Montenegro at 10.1%, in Serbia by 8.2%; then in Bosnia and Herzegovina by 5.5%, in Macedonia by 4.8%; in Croatia by 2.5%. Only in Slovenia is the total number of sheep reduced by 0.9%, as the lowest rate.

In **2011,** the total number of sheep in Serbia and the former Yugoslav republics calculated in relation to the base year (2007) points out a decrease in total number of sheep in all republics in last four years. In Serbia, the decrease is the highest (9.1%), followed by Slovenia with 8.5%, 6.2% in Macedonia, Montenegro with 6.1%, 5.4% in Bosnia and Herzegovina, while the lowest percentage of decrease in heads of sheep is in Croatia, 1.1%.

Table 2. The percentage share of individual Republics in total sum of sheep FYR (in %)

Total number of sheep of all Republics (in %)						
Year	Serbia	Bosnia and Herzegovina	Montenegro	Croatia	Slovenia	Macedonia
1967	41.7	21.4	5.7	10.5	0.4	20.3
1977	36.5	20.3	7.3	10.7	0.2	25.0
1987	34.3	18.2	6.2	9.2	0.3	31.8
1997	46.3	5.2	9.5	9.9	0.5	28.6
2000	39.3	7.6	7.4	12.9	2.3	30.5
2007	40.4	13.8	5.6	16.3	3.3	20.6
2008	40.7	13.5	5.3	16.3	3.5	20.7
2009	40.1	14.3	5.3	16.5	3.7	20.1
2010	39.5	13.9	5.3	16.9	3.5	20.9
2011	39.3	14.0	5.6	17.2	3.2	20.7

Source: FSO, 1968, 1978, 1988; SORS, 1998, 2001; SURS, 2013; FOS, 2011; SORS, 2014; SBC, 2012a, 2012b; MONSTAT, 2011; SSORM, 2012.

The share percentage of sheep number for certain republics in the total number of all republics is shown in Table 2. According to given calculation, in each year, Serbia has the largest share in the total number of sheep. If we look at the period of the former Yugoslav republics, the greatest increase in participation is in Serbia in 1997, about 46.3%. After Serbia, in the second place is Macedonia, which had the largest share in 1987 (31.8%). In Bosnia and Herzegovina, the recorded share in 1967 was 21.4% and the percentage held until 1977 is 20.3% and the participation of Croatia with 10.7% in the same year. Montenegro's participation was highest in 1997 (9.5%). The share in the total number of sheep for Slovenia in the same year is recorded at 0.5%; and had the lowest participation until 2000, when it increased to 2.3%.

If we take the period from 2007-2011 for analysis, since 2007, in some republics, there is a noticeable increase of participation in the joint sum of the total number of sheep (3,972,450 heads). In 2007, Serbia still has the largest share of 40.4%, followed by Macedonia with a share of 20.6%, followed by Croatia with 16.3%; then Bosnia and Herzegovina with 13.8% and at the end with the smallest share in the total number is Montenegro - 5.6% and Slovenia - 3.3%. From 2007 to 2011, there weren't any major variations in the share percentage, so Serbia still has the largest share in the last year (although slightly less than in 2008 and 2009 (when it was more than 40%)) and it amounts to 39.3%. Macedonia in 2010 has a share of 20.9%, followed by Croatia, which has an increased share in 2011 at 17.2%. Bosnia and Herzegovina has a share of 14% in 2011, while the lowest participations are those of Montenegro (5.6%) and Slovenia (3.2%), which reached the level of participation in 2007.

Graph 1. Number of sheep in some European countries according to highest number of sheep (in millions of sheep)
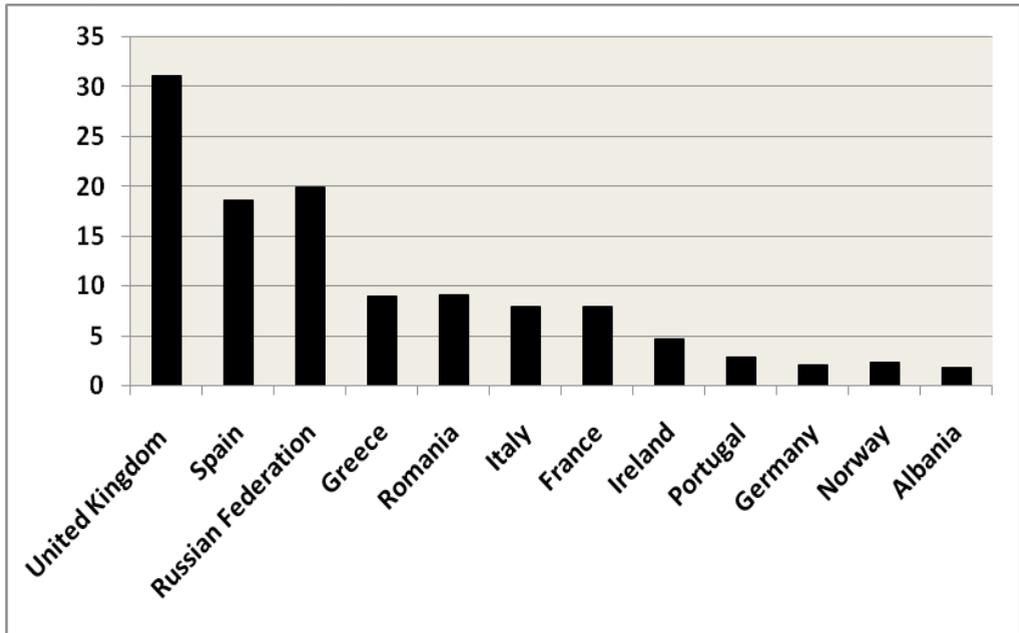
Source: FAO, 2012.

In the world there are around 1,077,762,456 sheep, according to the FAO, most of them in Asia (42.19%) and Africa (27.75%); while in Europe approximately 12.13% of the world's sheep population is being bred (FAO, 2012). The world's largest breeders are China with 12.44% and Australia with 6.32%. Europe's largest breeders of sheep are the United Kingdom with around 31 million heads, followed by the Russian Federation with over 19 million heads and Spain with more than 18 million heads. The most significant European countries by the number of sheep are shown in the Graph 1.

Out of the total number of sheep in Europe, 130,789,750 heads in twelve countries represent 89.71% of the European population of sheep (Graph 2.). In the EU, there are 99,862,823 sheep, which makes up more than 76% of the total number of sheep that are bred on the European continent. Calculation of the percentage of the total number of 130,790 heads of sheep in Europe, the highest percentage of participation is 23.77% in the United Kingdom, the Russian Federation with 15.18% and 14.18% in Spain.

The total sum of all sheep in all republics is 3,714,442 heads, and their percentage in the total number in Europe is 2.84%, while the share in the total world production is 0.34%.

Graph 2. Share of certain countries in total number of sheep in Europe, in 2012 (Number of sheep in Europe =100%)
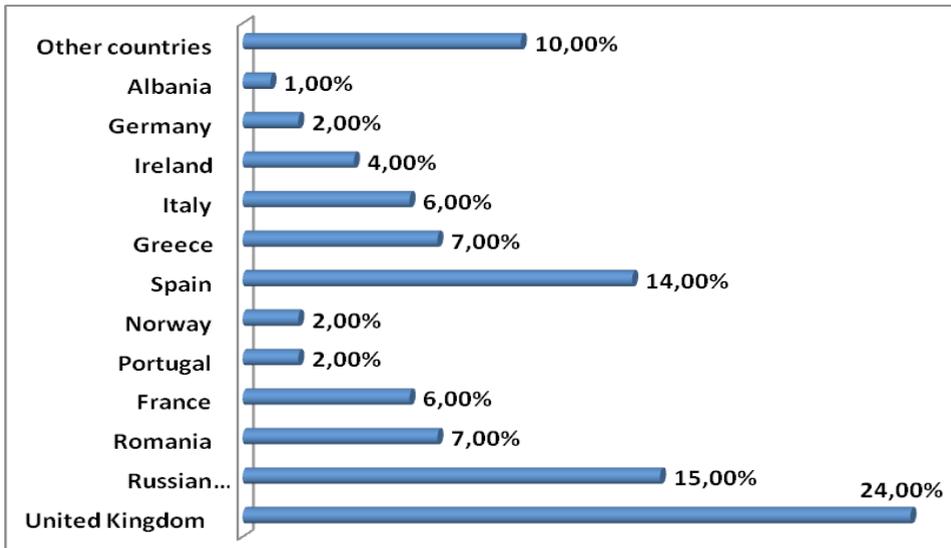
Source: Authors calculation according to FAO, 2012.

According to the analysis of the calculated share percentage in the total number of sheep in all republics with the 3,714,442 heads (2011), Serbia is in the first place with the highest percentage (39.3%), as well as the percentage share in total number of sheep in **Europe** (130,789,750 heads) with 1.11%, and the percentage share in world production of sheep (1,077,762,456 heads), which is 0.13%. The next is Macedonia with 20.7% of the total sum, which accounts for 0.59% of European sheep population, and for 0.071% in the world. Croatia participates with 17.2% of the total number, whereas it contributes with 0.48% in total European sheep population, and 0.059% in the world's sheep population. Likewise, Bosnia and Herzegovina has a share of 14.0% in total number, and in the European frame, that participation is at 0.40% and 0.048% in the world. The lowest share is in Montenegro with 5.6% of the total sum, while the share in the total European population of sheep is only 0.16% and 0.019% in the world; and Slovenia with 3.2%, and a share of 0.09% in the European population and 0.011% in world population.

Based on the calculation of Sredojević and Popović (2014), Serbia during 2012 is on the lowest level concerning its share in the number of sheep in the European Union, Europe and world. In 2012, the share of Serbia slightly increased to 1.68% compared to 2000, when the share stood at 1.56%. However, the share of Serbia in Europe fell from 1.31% (2000) to 1.27% (2012) and in the world from 0.18% (2000) to 0.14% (2012). It is notable that compared to 2011, the share of Serbia rose slightly by 0.01% in 2012.

As for the calculation of sheep number's percentage of participation by the regions the Republic of Serbia, in the observed year of 2011, the highest percentage of participation is in the Region Serbia-South (the Region of Šumadija and the West Serbia, which amounts

around 60%). The reason is the fact that the highest percentage of meadows and pastures in the Republic of Serbia is located in this region, and it amounts to 91.4%. The Region of South and East Serbia follows, with a share of 20.5%; the region of Vojvodina with 16.0%, and finally the Belgrade region with the share of only 3.6% in the total number of sheep in the Republic of Serbia (Arsić, Jovanović, 2013).

Based on last census from 2012, the highest share in total number of sheep of 1,729,278 heads of sheep in Serbia is in Serbia-South 79.9%, where the Šumadija Region participates with 60.4% and Region of South and East Serbia with 19.5%. Serbia-North participates with 20.1%, where the Belgrade Region belongs, with a share of 4.5% and Vojvodina Region with 15.6%.

During the 2012 in the Republic of Serbia, out of the total number of sheep – 1,721,036 heads are located in family households (99%), and only 17,242 heads are in commercial companies and agricultural cooperatives, which is only 1%.

Comparing the total number of sheep in Serbia in 2012 (1,729,278 heads) in relation to the numbers from 2007 and 2008, there is an increase of about 8% for both years, and compared to 2009 with a 15% increase, compared to the 2010 increase of 17.2% and in 2011 we have the largest increase of 18.4%. The average total number of sheep in Serbia for the past six years was 1,563 thousand heads (SORS, 2012).

Number of sheep related to 1,000 inhabitants/km^2 and total agricultural area

In the paper, besides the percentage change of the total number of sheep, the image of total number of sheep related to 1000 inhabitants per km^2 land surface and the total agricultural area, for the past two years for all republics is also done. Results of the calculation in accordance with these parameters are shown in the following text.

When the numerical state of the total number of sheep is brought in relation to the population, for the last two years, we get the data that **Macedonia** is in the first place (2010) with 378 and (2011) with 372 heads. In relation to the surface km^2, it is also the first (2010) with 30.3 and in 2011 with a 29.8 heads. In relation to the agricultural area it comes in second with 69.4 (2010) and 68.4 sheep (2011), (SSORM, 2012).

In the number of sheep in relation to population, the second is **Montenegro** with 320 heads (2010) and 336 heads (2011). However, in relation to the land area it is on third place with 14.3 (2010) and with 15.1 in 2011. In addition, it's in the fourth place in the number of sheep in relation to the agricultural area of 38.4 in 2010 and 40.5 heads in 2011 (MONSTAT, 2011).

In the number of sheep in relation to population **Bosnia and Herzegovina** is on the fourth place (2010) with 181 head and on the third place (2011) with 222 heads, related to the land area it comes in as fifth (2010 and 2011) with 10.1 heads. In the number of sheep related to the agricultural land it is on the third place in both observed years with 45.6 heads (FOS, 2011).

As for **Serbia**, it is third in the number of sheep in relation to the population (in 2010) with 207 and in 2011, Serbia is on fourth place with 205 heads of sheep; compared to the land area

it is second with 16.7 (2010) and with 16.5 heads in 2011. In relation to the agricultural area it is fifth in both observed years, with 29.2 and 29 heads (SORS, 2014).

If the number of sheep in **Croatia** is put in relation with the population it comes in fifth with 142 and 144 heads, according to the land area it is the fourth in the observation period with 11.1 and 11.3 heads. However, the number of sheep in Croatia in relation to its agricultural area is in the first place in 2010 and 2011, with 70.2 heads and 71.6 heads, respectively (SBC, 2012a).

The last observed republic is **Slovenia**, which in its total number of sheep related to all observed parameters, has the least sheep. Related to population it is 63 heads in 2010 and 58 heads in 2011. Related to the land area for 2010 that is 6.4 heads and in 2011 it is 5.9 heads. Finally, related to agricultural land in 2010 it has 26.9 heads, and in 2011, it has 26.2 heads (SURS, 2013).

In the world as well as in Serbia, sheep farming is an important branch of livestock production. Sheep production is primarily regionally distributed in mountainous areas or regions where there is a significant share of pastures in the structure of exploitation of agricultural land. In Serbia, out of 5,051 thousand hectares of agricultural land used in 2011, meadows and pastures constituted 29%. However, due to the intensive process of industrialization in the second half of the twentieth century, there is a trend of depopulation, deagrarisation and demographic emptying of villages resulting in a reduction in the number sheep, and many other mountains and pastures remain empty.

The reduction of the sheep fund (in all republics), in addition to the above reasons, is also influenced by the following factors: unstable economic trends in the country, the lack of long-term policies to improve sheep production, uncertain placement, poor credit standing breeders of sheep, minimal investment of banks and other entities in sheep production, weak links to organizations for processing and marketing sheep products and an increase in the number of elderly households.

In addition, in the period 2004-2008 in the countries of the European Union the number of sheep has declined from 73 million to 68 million heads. However, there are differences between countries, so the number of sheep in Greece remained at almost the same level of 8,980 heads, with minor fluctuations in some years in the period 2006 - 2010. In the same period, in Romania there is an increase (in 2006), from 7,678.2 to 8,469.2 heads which is 10.3% more than in 2007. In 2008 the number grew by about 5%, and in 2009, the increase was 3%, while in 2010 there was a decrease in heads of 8%, but in 2011 there is again an increase in the total number of sheep by 8.6%, reaching the level of heads in 2009 of 9,142 thousand heads of sheep.

In some larger countries of the European Union during the same period (2006-2010), there is notable a decrease of the total number of sheep in countries such as France, Ireland, Italy, Portugal and the UK.

In France in 2006 there were 8,494.2 heads of sheep; in 2007, that number decreased by

2.5%; in 2008 by 7%; in 2009 by 2.4%; in 2010 it decreased 8.3%. The trend of increasing the number of sheep is notable in 2011, when there were 7,977 heads or 15.5%.

In Ireland, the total number of sheep fluctuated in the same period: 2006 saw 3,826.3 heads, in 2007 the decline in the number of sheep was 7.7%. In 2008, the decrease was at 3%, in 2009, the decrease was at 7%, and in 2010 by 2%. In 2011, there was an increase in heads of sheep by 48.7% compared to the previous year. Compared to 2006, the increase was as much as 21.3%.

Italy in 2006 had 8,227.2 sheep, while in 2007 it had a slight increase of 1% compared to the previous year. However, in 2008 a decline in the total number of sheep by 0.8% was noted, in 2009, it decreased by 2%, in 2010 it came to 12.5% compared to the previous year (2009). A percentage increase in the total number can only be seen in 2011 compared to the previous year (14.3%), which means that it reaches the level of 2009 when there were 8,012.6 sheep.

Portugal during the same period also had a decline in the total number of sheep and in 2006 had 3,549 heads; in 2007, the number of heads decreased by 5.5%, in 2008 by 6.3%, in 2009 by 7.6%, in 2010 there was an evident decrease of 13.6%. In 2011 there is an increase compared to the previous year by 15.7% thus reaching the level of 2009 when there were 2,905.7 heads.

UK is the country with the largest number of sheep. However, in the same reporting period, a reduction in the total number of sheep occurred, except for 2007 when it had a minimal increase over the previous year (2006, when there were 23,428.5 heads) by only 1%. In 2008, there were 21.856 heads and a decrease compared to the previous year was nearly 7.7%. In 2009 it was 2.4% and in 2010 only 0.2%. In relation to the transitional year 2010, as in all countries, in 2011 there is an increase in the total number of sheep which amounts to 46.1% when there were 31.084 heads (SSORM, 2012).

The analysis shows that there is a reduction in the total number of sheep in all countries until 2010, but since 2011, there is an increase because many of the factors that have caused this situation disappeared. One of the biggest causes was the epidemic of foot rot in sheep, which appeared in 2001 in the UK and Ireland, where the number of heads decreased from 20 million to 16 million, or by 25%. In Serbia and the other republics in the observed 2011, there is an increase in Montenegro compared to the previous year by 5.3% and in Croatia by 1.4%. The greatest decrease in the total number of sheep is in Slovenia (2011) compared to the previous year, and it amounts to 7.7%, followed by Bosnia and Herzegovina at approximately 2.4%; in Macedonia and Croatia 1.5% and in Serbia by 1 %. However, in Serbia in the census of 2012, compared to the year 2011 there is a maximum increase of 18.4%. According to the mentioned observations, for the year of 2012, the situation in sheep breeding has been improving in Serbia, as well as in other countries. First, it has a strategic significance in hilly-mountain regions, then social significance, because the development of sheep breeding implies young people staying in the rural areas, and ecological significance, due to a great influence to biological resources (Kljajić et al., 2009).

Conclusion

From what has been said, it can be concluded that the total number of sheep has been steadily declining in almost all of the republics in the observed period (except for some years in the continuous observed period). In order to overcome the current situation in sheep breeding and job prospects for further development, the measures that could contribute to ensuring the steady and organized growth indicate the economic significance of this production, and higher planned investment in production (supply of breeding rams, reclaiming meadows and pastures, building renovation, etc.). There are also the design of agricultural policy measures in a way that would be stimulating for this production, identifying households that have the conditions and motivations to engage in this type of production and the creation of conditions for sheep breeders to come closer together and become economically stronger.

References

1. Arsić, S., Kljajić, N., Vuković, P. (2012): *Cattle stock and the analysis of total meat production in the Republic of Serbia,* Economics of Agriculture, vol. 59, no. 1, pp. 99-114.

2. Arsić, S., Jovanović, M., Vučković, S. (2013): *Voluminous (bulky) fodder as a factor of economic improvement sheep production in Serbia*, Proceedings, XXVII Conference of Agronomists, Veterinarians, Technologists and Agricultural Economists, vol. 19, no. 3-4, Institut PKB Agroekonomik, Belgrade, pp. 147-157.

3. Arsić S., Jovanović M. (2013): *Opportunities for Biomass Production in Meadows and Pastures as Factor of Improving Sheep Production in Serbia,* Agro-knowledge, University of Banja Luka, Faculty of Agriculture, vol. 14, no. 2, pp. 297-307.

4. B&H Federal Office of Statistic (FOS), (2011): *Statistical Yearbook of the Republic of Bosnia and Herzegovina*, Sarajevo, B&H, available at: www.fzs.ba

5. Cecić, N.,Vuković, P., Cvijanović, D. (2007): *Stanje i mogućnosti unapređenja kozarske i ovčarske proizvodnje u Srbiji*, Ekonomika Poljoprivrede, Vol. 54, no. 2, pp. 241-254.

6. Drucker, A. G., Gomez, V., Anderson, S. (2001): *The economic valuation of farm animal genetic resources: a survey of available methods*, Ecological Economics, vol. 36, pp. 1–18.

7. FAO (2009): *Statistical Yearbook 2009*, FAO, Rome, available at: www.fao.org/docrep/014/am079m/pdf/am079m00a.pdf

8. FAO (2012): *Statistical yearbook, Europe and Central Asia, Food and agriculture,* FAO, Rome, available at: www.fao.org/docrep/017/i3138e/i3138e.pdf

9. Federal Statistical Office (FSO), (1968): *Statistical yearbook of the Socialist Federal Republic of Yugoslavia*, FSO, Belgrade, SFRY.

10. Federal Statistical Office (FSO), (1978): *Statistical yearbook of the Socialist Federal Republic of Yugoslavia*, FSO, Belgrade, SFRY.

11. Federal Statistical Office (FSO), (1988): *Statistical yearbook of the Socialist Federal Republic of Yugoslavia*, FSO, Belgrade, SFRY.

12. Kljajić, N., Arsić, S., Savić, M. (2009.): *Analysis of milk production and perspectives of goat and sheep breeding in Serbia,* Economics of Agriculture, vol. 56, no. 3, pp. 417-429.

13. Montenegro Statistical Office (MONSTAT), (2011): *Statistical yearbook*, MONSTAT, Podgorica, Montenegro, available at: www.monstat.org

14. Republic of Macedonia State Statistical Office (SSORM), (2012): *Livestock Statistical Yearbook of the Republic of Macedonia 2012*, SSORM, Animal Husbandry, Skopje, Macedonia, available at: www.stst.gov.mk

15. Ruane, J. A. (2000): *A framework for prioritizing domestic animal breeds for conservation purposes at the national level: a Norwegian case study,* Conservation Biology, vol. 14, pp. 1385–1393.

16. Sredojević, Z., Popović, N. (2014): *Sheep farming-pastures-sustainability: an economic model of sheep farm for rural areas in Serbia,* Thematic Proceedings -International Scientific Conference - Sustainable agriculture and rural development in terms of the Republic of Serbia strategic goals realization within the Danube region – achieving regional competitiveness, June 2014, IAE, Belgrade, pp. 1006-1023.

17. Statistical Bureau Croatia (SBC), (2012a): *Statistical Yearbook of Republic of Croatia*, SBC, Zagreb, Croatia, available at: www.dzs.hr

18. Statistical Bureau Croatia (SBC), (2012b): *Croatia in figures 2011* www.dzs.hr

19. Statistical Office of the Republic of Serbia (SORS), (1998): *Statistical yearbook*, SORS, Belgrade.

20. Statistical Office of the Republic of Serbia (SORS), (2001): Statistical yearbook, SORS, Belgrade.

21. Statistical Office of the Republic of Serbia (SORS), (2012): *Statistical yearbook of Serbia – 2011,* SORS, Belgrade.

22. Statistical Office of the Republic of Serbia (SORS), (2012): *Census of agriculture*, book II, SORS, Belgrade.

23. Statistical Office of the Republic of Serbia (SORS), (2014): *Statistical Pocketbook of the Republic of Serbia - 2014*, SORS, Belgrade, available at: http://pod2.stat.gov.rs/ObjavljenePublikacije/G2014/pdf/G20142012.pdf

24. Statistical Office of the Republic of Slovenia (SURS), (2013): *Statistical Yearbook of Republic of Slovenia, Agriculture and fishing (2007-2011)*, SURS, Ljubljana, Slovenia, available at: www.stst.si

25. Tempelman, K. A., Cardellino, R. A. (2007): *Preserving and developing unique animal genetic resources for future generations,* Chapter 6 in: Tempelman, K. A., Cardellino, R. A. (Eds.) - People and animals: traditional livestock keepers: guardians of domestic animal diversity, FAO Inter-Departmental Working Group on Biological Diversity for Food and Agriculture, monograph, FAO, Rome, pp. 111 – 119.

KOMPARATIVNA ANALIZA BROJA OVACA U BJR I NEKIM EVROPSKIM DRŽAVAMA

Slavica Arsić[5], Marijana Jovanović[6], Zorica Sredojević[7]

Apstrakt

U Srbiji ovčarstvo iz godine u godinu beleži silazni tok kako po broju ovaca, tako i po proizvodnji mleka i mesa. Glavni cilj ovog rada je analiza broja ovaca u Srbiji i u zemljama u okruženju (BJR).

Upoređujući trenutno stanje ukupnog broja ovaca (2011) sa stanjem u nekadašnjoj Jugoslaviji dolazimo do rezultata koji ukazuju da je u Srbiji za 66% manje ovaca od ukupnog broja u odnosu na 1967. godinu (bazna godina). Poređenjem sa poslednjim popisu iz 2012. godine u Srbiji je povećan broj ovaca u odnosu na predhodu godinu (2011) za 18.4%.

Kod ostalih bivših jugoslovenskih republika takođe imamo smanjenje ukupnog broja ovaca: u BiH za 76.5%, u Crnoj Gori za 64.3%, Hrvatskoj za 41.3%, Makedoniji za 63.5% u odnosu na 1967. godinu (bazna godina), izuzev Slovenije koja ima povećanje ukupnog broja ovaca za 83 hiljade grla.

U radu je dat pregled broja ovaca za neke Evropske države i za pojedine delove sveta, u cilju upoređivanja sa stanjem ovaca u BJR.

Ključne reči*: ovce, bivše jugoslovenske republike (BJR), Evropa, svet.*

5   Mr Slavica Arsić, istraživač-saradnik, Institut za ekonomiku poljoprivrede, Volgina 15, 11060 Beograd, Srbija, Telefon: + 381 11 69 72 852, E-mail: slavica_a@iep.bg.ac.rs

6   Marijana Jovanović, B.Sc., istraživač-saradnik, Institut za ekonomiku poljoprivrede, Volgina 15, 11060 Beograd, Srbija, Telefon: +381 11 69 72 842, E-mail: marijana_j@iep.bg.ac.rs

7   Prof. dr Zorica Sredojević, redovni profesor, Univerzitet u Beogradu, Poljoprivredni fakultet, Institut za agroekonomiju, Nemanjina 6, 11080 Zemun, Srbija, Telefon: +381 11 2615 315/lok 297, E-mail: zokas@agrif.bg.ac.rs

CURRENT STATE AND PERSPECTIVES OF SHEEP BREEDING DEVELOPMENT IN RUSSIAN MODERN ECONOMIC CONDITIONS

Marina Lescheva[1], Anna Ivolga[2]

Summary

Sheep breeding is one of the most important branches of rural industry in Russia, which has deep historical roots, satisfies the needs of the population in wool, mutton, sheepskins and other products. The industry provides employment and incomes for considerable part of the rural population, allows preserving the traditional way of life in many rural regions. The branch of sheep breeding has been in depressive state for the last twenty years because of its unprofitability. The industry still lags behind in technological, technical, organizational and economic indicators. The nature of reproduction of sheep is based on the extensive type of development; and the field has been narrowed down compared to previously years. The negative consequences of this are manifested in economic and social aspects that lead to incomplete use of rangelands. As a result, situation does not meet the national interests, and regional governmental authorities and research community are especially focused on the sheep breeding industry.

Key words: *sheep breeding, economic analysis, market, wool, mutton, innovations, improvement, directions of development.*

JEL: *Q17, Q18*

Introduction

Organizational and economic aspects of development of the Russian sheep breeding were considered in the works of such scientists as Gezihanov S. A. (Gezihanov, 2013), Aboneev V. V., Kvitko J. D. and Kulakov B. S. (Aboneev et al., 2013), Erokhin A. I., Uldashbaev J. A. and Rybin G. I. (Erokhin et al., 2013), Ulyanov A. N. and Kulikova A. Y. (Ulyanov, Kulikova, 2013), Khanmagomedov S. G., Alieva O. J. and Orudzhev Z. A. (Khanmagomedov et al., 2013), Lescheva M. and Ivolga A. (Leschev, Ivolga, 2013).

1   Marina Lescheva, Ph.D., Professor of the Department of Economic Analysis and Audit, Stavropol State Agrarian University, Zootekhnichesky Pereulok no. 12, 355017 Stavropol, Russia, Phone: +786 52 35 59 80, E-mail: marina_lesheva60@mail.ru

2   Anna Ivolga, Ph.D., Associate Professor of the Department of Tourism and Service, Stavropol State Agrarian University, Zootekhnichesky Pereulok no. 12, 355017 Stavropol, Russia, Phone: +786 52 35 59 80, E-mail: annya_iv@mail.ru

The organization and management of industry in the small farms of ownership was studied by Kiryanov D. A. (Kiryanov, 2013). The problems of assessing and improving the economic efficiency of sheep farming were reflected in the writings of Petrova T. A. (Petrova, 2012), Revyakina E. L., Chistyakova N. D. and Mirzoyanz Y. A. (Revyakina et al., 2007), and Sharipov I. (Sharipov, 2000). Assessment of competitiveness of sheep production in Russia was conducted by Urbanskaya G. G. (Urbanskaya, 2009). The impact of Russia's membership in World Trade Organization (WTO) on the development perspectives of the industry were considered by Aboneeva (2013). Activization of the main problems of innovative activity in modern sheep farming was also reflected in the researches (Yuldabashev, Lescheva, 2013). Foreign experience in efficient production of sheep products was studied in the works of Scherbakova (2006), Petrovic et al. (2013) and other scientists.

Despite amount of work, economic analysis of the state of the industry needs to actualize this sphere, requires adaptation of the previously areas, which was developedearlierto specific conditions of the modern market. These aspects determined the purpose and objectives of the present study.

The purpose of the study was to analyze the current state of sheep breeding, assessment of current trends, structural changes and justification for promising perspective direction of development of the industry.

Conditions, materials and methods

The research was based on dialectic, abstract-logical, comparative methods with active using of index analysis, official information of statistic, compilation of data for scientific publications. In the paper were used material from Food and Agriculture Organization of the United Nations (FAO), Federal State Statistics Service of Russian Federation (ROSSTAT), as well as methodical and analytical materials of the Ministry of Agriculture of Russian Federation.

Results and discussion

The number of sheep, mostly fine-wool sheep, in Russia was relatively stable and amounted to more than 58 million heads in 1985-1991, in the agricultural organizations were 42 million heads and in the private sector were more than 16 million sheep. In the process of agrarian reform was implemented land privatization, reorganization of collective and state farms.

State regulation of the agricultural sector has changed significantly, that has led to a new economic behavior of producers, the formation of different agrarian structures, which naturally affected on sheep breeding. The general crisis of agriculture is especially apparent in the industry of sheep breeding. As a result, the number of sheep decreased to 14.8 million heads in the country in 1999.

Sheep breeding was included in the priority national project of development of the agrarian complex of the Russian Federation in 2006-2007 and in the state Program of development of agriculture for 2008-2012, that allows Russia to overcome critical minimum. The number of animals increased to 9.5 million heads in 2013. Currently the number of sheep and goats is 24.3 million heads in all categories of farms of the country (Figure 1).

Figure 1. Number of sheep in Russia (in mln. heads)
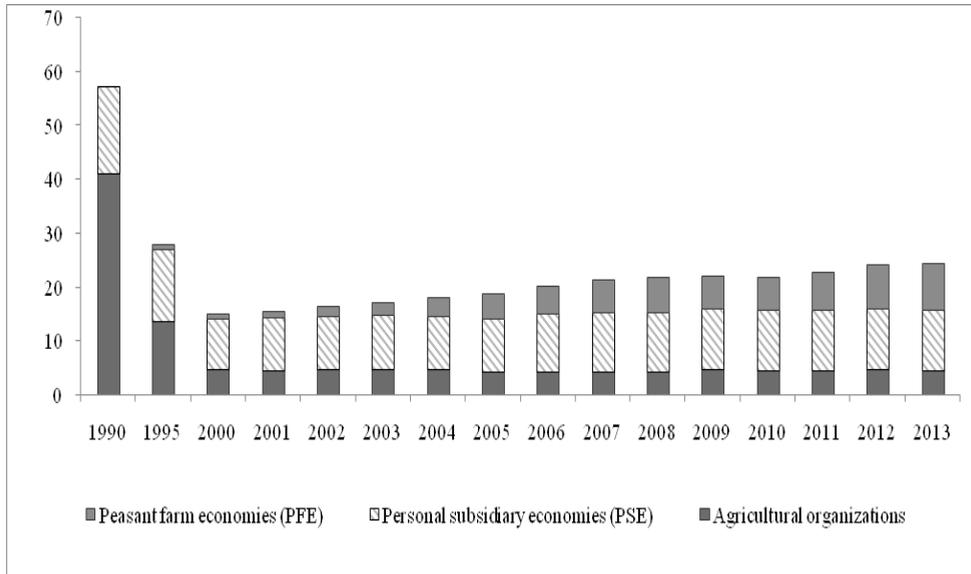
Source: Authors calculation according to data from ROSSTAT, 2015.

The number of sheep was redistributed by farms` categories. About 70.6% of the sheep were kept in agricultural organizations and 29.4% in personal subsidiary economies (PSE) in 1990. This ratio has changed radically over the past 25 years. The total number of sheep and goats in agricultural enterprises amounted to 4.4 million (18%), 11.4 million heads (47%) is found in the possession of the population (PSE), 8.6 million (35%) in peasant farm economies (PFE), (Figure 2).

Figure 2. Distribution of sheep and goats by types of farms (in %)
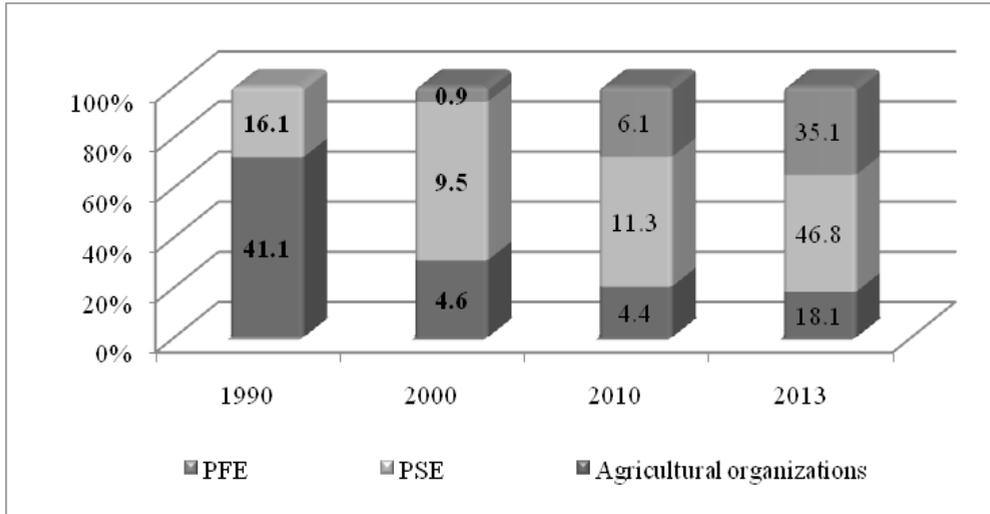
Source: Authors calculation according to data from ROSSTAT, 2015.

Production of the main kinds of sheep products is proportional to their numbers in different categories of farms. Currently, productions which are in possession of the population produce 49% wool, 72% of lamb; the proportion of PFEs is respectively 33% and 20%, when agricultural organizations make only 18% and 8% correspondingly.

Figure 3. Production of the major kinds of sheep production by categories of farms in 2013
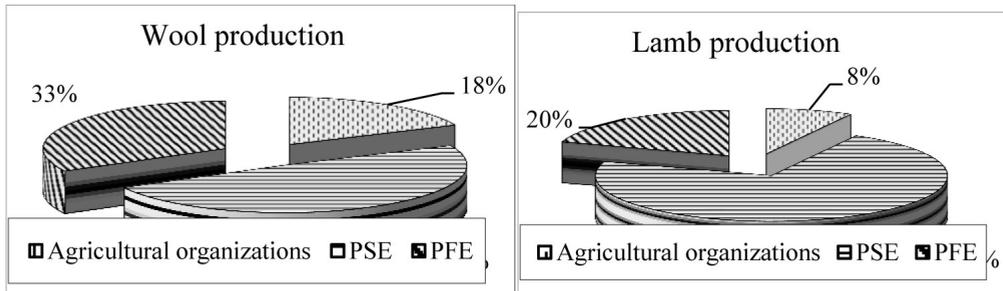
Source: Authors calculation according to data from ROSSTAT, 2015.

Agriculture organization lost its leading role in the production of wool and meat sheep. Many sheep breeding farms were liquidated and lost its significant portion of the most genetically valuable livestock. Rural organization fully reduced the livestock of sheep of such breeds as Askaniiskaya, Vyatskaya; Gorkovskaya; Kochugurovskaya. Valuable breeds of Kuibyshev and Russian longhair are on the verge of extinction. The number of sheep breeds Salskaya is 2.1 thousand heads and Lincoln Kuban are only 800 heads. The small number of these sheep breeds, in future, will lead to their extinction from the territory of the Russian Federation, which will damage to the gene pool of sheep for our country.

More than half of the sheep are concentrated in private subsidiary farms of the population with extremely low capacity for breeding work, intensification of production and science. The increase in the number of sheep in farms of the population is accompanied by spontaneous delivery of sheep of different breeds and quality, violation of the prevailing zonal rock zoning, with reduced role for the breeding of all breeds of sheep. Reproduction in PSEs is carried out by extensive and does not provide acceptable rates of growth and production (Figures 4 and 5).

Figure 4. Production of wool in all categories of farms (in tons)
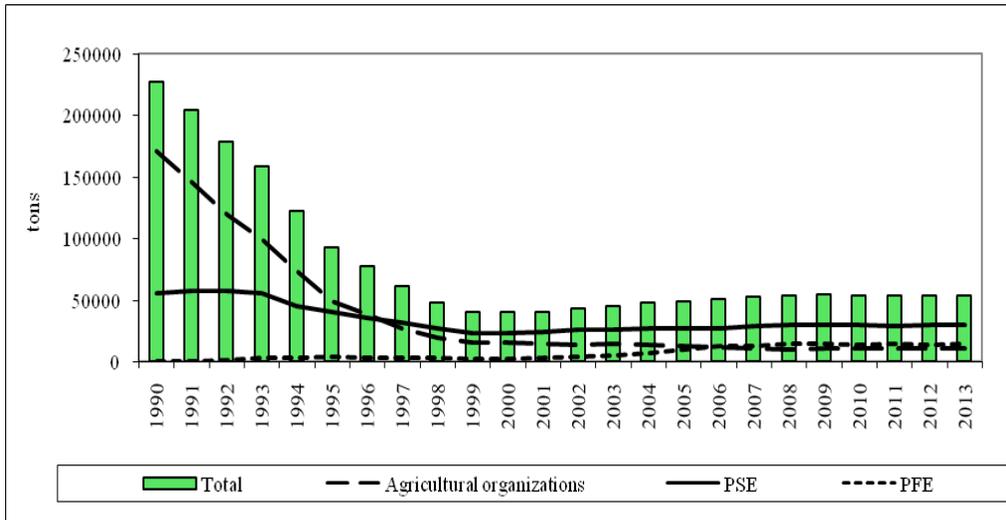
Source: Authors calculation according to data from ROSSTAT, 2015.

The average annual growth rate of wool production amounted to 1.6%; mutton – 3.1% in 2005-2013. Sheep breeding on farms is developing very fast, but it is not able to compensate the decline in production in the public sector.

Figure 5. Production of sheep meat in all categories of farms (in 000 tons).
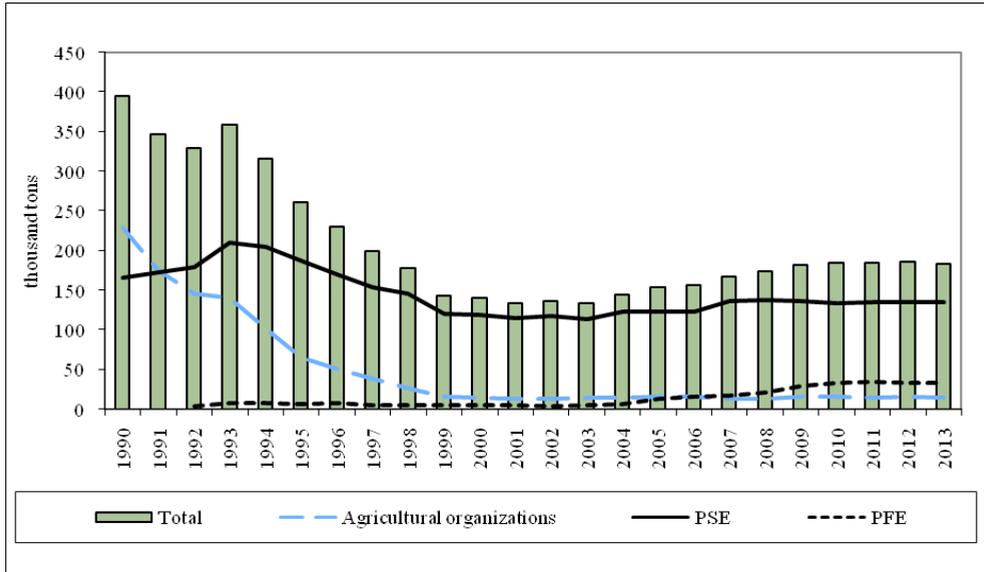
Source: Authors calculation according to data from ROSSTAT, 2015.

Productivity of animal production is very low. Average wool production from a single sheep steady decline in all categories of farms in 2013 and reached a minimum value of 2.4 kilogram per head. Average daily weight of sheep is only 35 grams (Table 1).

Table 1. Indicators of productivity of sheep in the Russian Federation

Indicators	2000	2008	2009	2010	2011	2012	2013
Average daily gain of sheep on growing, feeding and fattening in agricultural organizations, grams	26.0	30.0	30.0	32.0	36.0	36.0	35.0
Average wool clip per sheep in physical weight, kg: - in all categories of economies	3.1	2.7	2.8	2.6	2.6	2.6	2.4
- in agricultural organizations	3.2	2.5	2.8	2.3	2.2	2.3	2.3
- in PSEs	3.1	3.1	3.1	3.0	2.9	2.9	2.7
- in PFEs	2.9	2.3	2.3	2.4	2.4	2.4	2.2

Source: Authors calculation according to data from ROSSTAT, 2015.

Lamb production per capita is 1.2 kg, while in 1990 it reached 2.5 kg. For comparison, in Australia the average lamb production per capita is 25.3 kg, in New Zealand – 104.5 kg. The share of lamb meat in the overall meat production in Russia is insignificant, and is reducing year by year, in 1990 – 3.7%; in 2008 – 2.9%; in 2013 – 2.3%.

Import of mutton in Russia has increased threefold during 2000-2013, reaching 11 thousand tons (value is comparable to the volume of the mutton production in the rural organizations of the country). Russia imports wool and lamb, having 80.4 million hectares of natural grasslands, pastures and fallow lands.

The most important economic task is to dive a new impetus to development of shhep production. It is necessary to make some restoration and qualitative updates in the industry of sheep breeding. It is important to make the new base of it, paying special attention on structural, typical and technological changes.

Light industry has limited demand for raw wool that does not stimulate its production, estimating possibilities of the industry to adapt to current economic conditions.

The changing structure of the consumption of light industry of the fibers has led to in a significant reduction in the capacity of the wool market associated with large-scale substitution of natural fabrics of artificial (Table 2).

Table 2. Production of textile fibers in the world

| Years | Clean wool | | Cotton | | Linen | | Silk | | Man-made fiber | | Total |
	thous. tons	%	thous. tons	%	thous. tons	%	thous. tons	%	thous. tons	%	thous. tons
1970	1,701	7.7	11,379	51.2	703	3.2	41	0.2	8,397	37.8	22,221
1980	1,646	5.4	14,084	46.0	620	2.0	56	0.2	14,182	46.4	30,588
1990	2,007	5.2	17,362	44.9	688	1.8	66	0.2	18,519	47.9	38,642
1995	1,520	3.5	18,762	43.3	740	1.7	92	0.2	22,204	51.3	43,318
2000	1,343	2.7	19,095	38.6	479	1.0	96	0.2	28,434	57.5	49,447
2005	1,220	1.9	26,193	41.9	760	1.2	120	0.2	34,290	54.8	62,583
2012	1,136	1.3	27,181	31.1	263	0.3	175	0.2	58,645	67.1	87,400

Source: Authors calculation according to FAO, 2015.

According to the information, we see that the wool's share decreased almost sixfold from 1970 to 2012 in the total production of textile fibers, while the share of synthetic fibers of all kinds has increased twofold. Currently, the proportion of wool in the manufacture of all textile fibers is 1.3%, of artificial fibers – 67.1% (Figure 6).

Despite the contraction in demand, the domestic sheep does not cover the needs of the textile industry in raw wool. The share of imported products in terms of pure fiber is more than 20% in the formation of wool resources.

The imposition of sanctions and the fall of the ruble in 2014, serving as a signal for import substitution and increased export supplies of wool, and therefore, the restoration of the wool of sheep Russia. However, the market of sheep production is currently focused primarily on the production of meat sheep.

Figure 6. Percentage of wool and artificial fibers in the manufacture of all textile fibers in the world (in %)
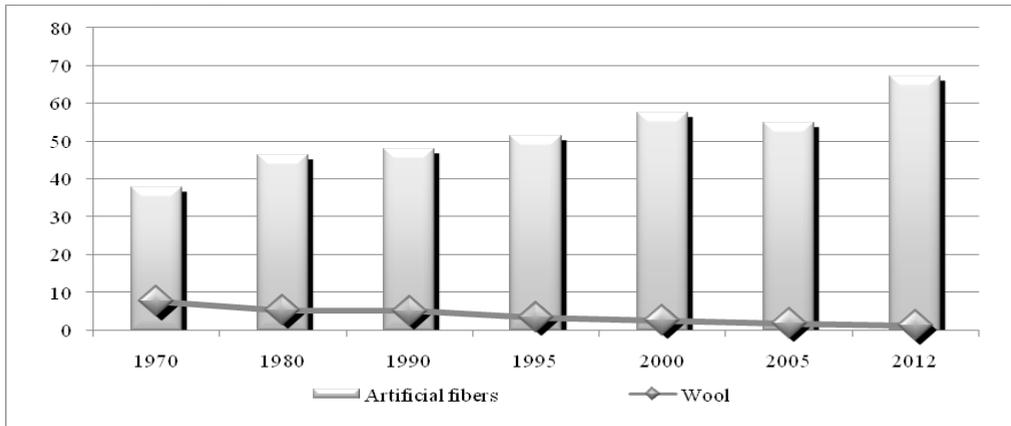
Source: Authors calculation according to data from ROSSTAT, 2015.

The industrial crisis of the country for wool processing, the destruction of the system of preparation of wool for implementation significantly reduced its economic importance. Selling price of 1 ton of raw wool on the average in the Russian Federation amounted to 35,329 ruble (varying by region) in 2014, while the average revenue per 1 ton of meat (in live weight) amounted to 101,463 ruble. The price ratio reduces the economic value of wool productivity of sheep. At a cost of wool production 85-95 rubles per 1 kg, a loss from its sale varies from 50% to 90% and even more.

According to Figure 7, the price indices for sheep meat on average over the last 15 years amounted to 118%, the price index for wool – 114%.

Figure 7. Indices of producers' prices of sheep products (in % to previous year)
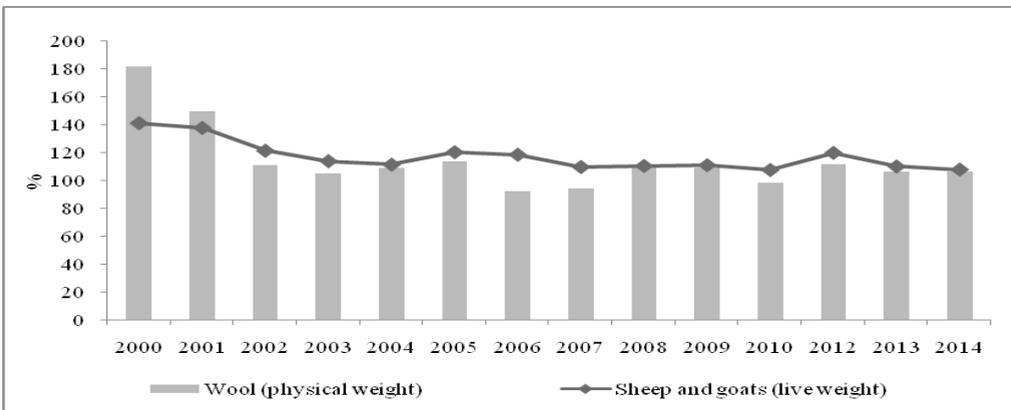
Source: Authors calculation according to data from ROSSTAT, 2015.

These changes are consistent with global trends. According to the FAO, the price of mutton increased almost linearly up to 2000 with an average absolute increase 0.05 dollar for a year. Then they abruptly increased, reaching back to 2005 value of 4.2 dollars per kilogram. The price of washed wool grew faster than the prices of mutton in 1990, but the pace of growth gradually slowed down. The price of mutton was higher wool prices in 2005 and this relationship holds at the present time. Selling price of wool is prevailing in the Russian market, close to the world level of prices for fine and semi-fine wool of satisfactory quality. At the same time, revenue for the annual wool production from one head (2.9 – 3.9 kg) provides coverage only 5–9% of direct expenses (from 760 to 1,500 rubles). Increasing the economic efficiency of the industry is not provided morphological characters of the domestic sheep by improving the quantitative and qualitative characteristics of coat.

Reorientation of the industry with a primary coat of direction on local meat-coat and meat directions will be kind of response to these market signals.Currently, for meat breeds can only be attributed to 24.7 thousand heads of rocks as Lincoln, Dorset, Romney-Marsh, Suffolk, Texel, Tashlinskaya, southern meat, which comprise only 0.6% of the sheep population in the agricultural organizations of the country. A number of breeds of meat and wool production efficiency (Gornoaltaiskaya, Kuibyshevskaya, Russian long-haired, Sovietskayameat-coat, Tsigayskaya and others), make up another 6% of the total number of sheep in agricultural organizations and need to improve meat forms and increase energy growth. The share of fine-wool sheep areas accounted for 58.9% of the cattle and coarse wool fat-tailed sheep (31.1%), and 3.4% – unidentified animals. About the breed composition of the animals kept in households and PFEs, there is no exact information, but it can be assumed that more than 80% of them are low productive animals, or hybrids of different species and productivity trends.

In such a situation, it is difficult to expect high rates of industry development and implementation of target indicators of the state branch program "Development of sheep and goat breeding in the Russian Federation for 2012-2014 and the planning period until 2020". It is necessary to identify the regions with predominant development of the Merino sheep and beef, to develop a perspective model of the interaction between large and small producers with each other, with servicing companies, with other market participants to overcome the spontaneity and restore science-based approach to the development of sheep breeding on the basis of zootechnical and economic recommendations.

Also, people need to make evidence-based decisions about using land for agricultural purposes, under the jurisdiction of municipalities, as more than 50% of the sheep population is located in the sector of private households and the increase in their numbers, as well as the development of dairy goat breeding. The use of land without control may narrow the already scarce food base small livestock private sector.

The concentration of a significant portion of sheep livestock on private farms must not impinge on the activities of state, tribal enterprises. It is necessary to develop

procedures and forms of control over the use of breeding animals in the private sector, to distribute grants for the maintenance and breeding of animals from the Federal budget for breeding sheep and goats contained in small holdings. Organization of breeding work in the private sector, the size and the mechanism of subsidy payments also need to be improved.

The technological shift from predominantly growing sheep predominant raw material to the production and processing primary and secondary raw materials to the final product should play a significant role in the development of the industry. This requires increased investment in processing industry, both primary and secondary raw materials. Additional income received from investments in these industries, will mean increased cost impact of raw sheep and correspondingly more full realization of sheep and goat economic potential.

An important condition for the development of the industry is the activation of innovative sector of science in the new conditions. If we want to solve the tasks in agrarian sphere, restore reproduction processes, to catch up with the advanced industrial countries they need to refocus the industry on the path of innovative development. This way will improve production efficiency, reduce dependence on imports, and ensure the competitiveness and sustainability of domestic agriculture in future. Also, solving of problems in sheep breeding requires special approaches.

In recent years scientists of the Russian Scientific Research Institute of Animal Production named after academician L.K. Ernst, Stavropol Research Institute of Livestock Breeding and Fodder Production, North Caucasus Research Institute of Animal Production, Russian Research Institute of Sheep Breeding, Krasnodar Research Institute of Agriculture named after P.P. Lukyanenko, Moscow State Academy of Veterinarian Medicine and Biotechnology named after K.I. Skryabin, Russian State Agrarian University named after K.A. Timiryazev, Stavropol State Agrarian University and other research institutions created fourteen new types and breeds of sheep with higher rates of productivity and consumer properties of products: southern meat; Booba; Aginskaya; Kulundinskaya, Tashlinskaya breed; type sun (tsigayskaya breed); type of mining (Tuvankoro-tkozirnohvostaya breed); steppe type (Tuvankorotkozernisty breed); sending type (Soviet mutton-wool breed); Udmurt type (Soviet mutton-wool breed); dogoiski type (Zabaykalsky breed); Argun type (Zabaykalsky breed); prikauntski type (gornoaltaiskii breed).

At the same time, the most important challenge of modern Russian sheep breeding is the development of desert, semi-desert mountain and Alpine pastures to obtain competitive sheep production through cultivation of local coarse-woolen and fat-tailed sheep breeds – Karachai, Andean, Buryat, Karakul, Kochugurovskoy, Kulundinskoy, Tushinskoy, edilbaevskaya, Romanovskoy and several others, most of which are small and require special measures for the conservation and breeding. The special value of them represent multiple Palestrina breed – Romanovskaya, Imeretinskaya, East Frisian, the gene pool which can be used to improve these symptoms and the most common

breeds of beef and mutton-wool productivity trends.

Scientists have created a new resource-saving technologies, have developed recommendations for the modernization of existing methods of production of sheep breeding products that significantly enhance the profitability of the industry, which was named as innovative technology for the production of broiler lamb; system feeding young sheep under intensive rearing and fattening; low-cost technology of pasture and the stabling of sheep; the evaluation system of hereditary qualities of breeding animals using genetic markers and DNA technology. In obtaining was developed a number of methods of freezing in cryobank that indicates seed of rare such breeds as snow sheep, Siberian ibex, Edilbaevskaya, Hissar and Romanov sheep. Scientists use the method of complex estimation of rams on the quality of offspring; the method of assessment and prediction of meat productivity at an early age on the basis of blood groups of DNA markers sheep; biotechnological methods for assessing the productivity of sheep, methodological and methodical recommendations on creation of systems of keeping and feeding of sheep, biotechnological approaches to the control of products and selection assessment using computer programs, methods of semen cryopreservation of rare and endangered breeds of sheep and goats, the mobile system chipping, improved systems of machinery and equipment, etc.

However, the efforts of Russian scientists are minimized by an ineffective system of management of innovative development of the industry. Industry government bodies, scientific and educational institutions, agricultural producers are coordinated community. The lack of a central guiding action of the branch research institutes and infrastructure is holding back innovation in practical sheep breeding, the rate of promotion of new products and processes in sheep is very low compared to the potentially possible.

In this area, was established the National Union of Sheep Brreding, developed the program "Development of sheep breeding 2010-2020, and plan of spoil placement sheep for Federal districts, given the organizational and economic evaluation model models sheep farms of industrial type farms and households, defined organizational and economic performance standards effective management of sheep, prepared for the introduction of information-analytical system "Selex-sheep"; the software is developed and formed the base breeding and genetic data.

However, the gap between the scientific support of sheep breeding and the practical implementation of innovations has not been overcome. The main problem of the implementation of the innovative strategy of development of the industry is that even in the presence of new breeds and technologies not developed channels of them in practical sheep breeding and no qualified personnel for their development. This determines the low susceptibility of rural producers to new developments.

Great value, in this regard, has organizational and economic support of development of innovations in mass production practices of sheep production by improving the organization of the innovation process and economic innovation.

It should be noted that in the agricultural sector financing of new development is limited by lack of financial resources, lack of necessary for the development of innovative areas of the institutional framework, weak market infrastructure, and the development and, as such, does not have a mass character, their share in the cost of rural products is very small. In this regard, the most relevant for the industry is the use of a wider approach, according to which, under the innovation refers not only to the investments in the creation of something new, but also investing in the acquisition of innovations, including the practical implementation of the global reserve of knowledge.

There is a constant trend of higher energy prices, and given the host specificity of sheep in distant pastures, certain important issues of the Autonomous power supply of sheep-breeding facilities. The use of wind generators, solar panels, other equipment and new energy sources (e.g. biogas) can contribute to the rational use of sheep those areas that cannot be used in another way. Addressing these issues requires careful and fully informed approach to the dissemination of domestic innovative developments in this field, or the corresponding import of foreign equipment and technologies.

Great opportunities in the development of sheep farming are realized through improving the information security industry. The website of the nonprofit organization the national Union of farmers does not address in this area of problems, because information is limited and is updated with a delay. The site does not contain on industry legislative and legal information, including on land use, subsidies and other issues. The website does not reflect information about the breeding farms and promising breeds of sheep and goats contains policy briefs on the state of the domestic and international markets, sheep, and other useful information.

Conclusions and perspectives for further research

The crises in industry of the sheep breeding are in the process of overcoming. The level of financial, personnel, logistical and informational support for the sector is extremely low. Coordinating and catalytic role of the National Union of farmers are not implemented in full. There is a gap between the scientific development of the industry and its practical implementation, which constrains the capacity of production of sheep breeding.

The potential for further development is the availability of natural forage lands, the possibility of rapid reproduction, increasing demand for industry products in terms of import, state support in accordance with the adopted program "Development of sheep and goat breeding in the Russian Federation for 2012-2014 and the planning period until 2020", the adaptation of innovations to the realities of the industry. Subsequent studies should be aimed at a detailed study of the market and improve the marketing of sheep products.

Literature

1. Aboneev, V. V., Kvitko, Y. D., Kulakov, B. S. (2013): *Стратегия овцеводства Ставропольского края*, Sheep, goats and wool production, vol. 2, pp. 15-18.

2. Aboneeva, E.V. (2013): *Некоторые аспекты повышения эффективности производства продукции овцеводства в условиях вступления России в ВТО*, Sheep, goats and wool production, vol. 1, pp. 41-43.

3. Erokhin, A. I., Rybin, G. I., Yuldabashev, Y. A., Lescheva, M. G. (2013): *Развитие мясного овцеводства в центральной России*, Sheep, goats and wool production, vol. 1, pp. 2-8.

4. Federal state statistic servise of Russian Federation (ROSSTAT), data base of the ROSSTAT, Moscow, Russian Federation, available at: www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/enterprise/economy/, accessed at: March, 2015.

5. Food and Agriculture Organization of the United Nations (FAO), data base of the FAO, Rome, Italy, available at: www.fao.org, accessed at: March, 2015.

6. Gezikhanov, S. A. (2013): *Восстановление овцеводства: некоторые аспекты теории и практики*, Agricultural Policy of Russia, vol. 12, no. 24, pp. 38-41.

7. Khanmagomedov, S. G., Alieva, O. Y., Orudzhev, Z. A. (2013): *Современные реалии и направления развития экономики овцеводства*, Bulletin of the Orenburg State Agrarian University, vol. 3, no. 41, pp. 209-213.

8. Kiryanov, D. A. (2013): *Организация и ведение отрасли овцеводства в хозяйствах малых форм собственности*, Ulyanovsk State Agricultural Academy, Ulyanovsk, Russia.

9. Lescheva, M., Ivolga, A. (2013): *Russia's meat market: current state and perspectives*, Proceedings, International Scientific Conference - Sustainable agriculture and rural development in terms of the Republic of Serbia strategic goals realization within the Danube region, IAE, Belgrade, pp. 1–16.

10. Petrova, T. A. (2012): *Повышение эффективности функционирования отрасли овцеводства на основе формирования инвестиционной привлекательности*, Ph.D. dissertation, Saratov State Agrarian University n.a. N.I. Vavilov, Saratov, Russia.

11. Petrovic, M. P., Petrovic, V. C., Ilic, Z. G., Milosevic, B., Milenkovic, M., Spasic, Z., Stoikovic, J. (2013): *Состояние и перспективы овцеводства в Сербии*, Sheep, goats and wool production, vol. 1, pp. 13-15.

12. Revyakin, E. L., Chistyakov, N. D., Mirzoyanz, Y. A. (2007): *Рекомендации по развитию высокоэффективного овцеводства*, Ministry of Agriculture of the Russian Federation, Rosselkhozbank OJSC, Moscow, Russia.

13. Scherbakova, G. P. (2006): *Анализ наиболее важных производственно-экономических факторов, влияющих на развитие овцеводства в Болгарии*, Economics of Agriculture, vol. 3, p. 719.

14. Sharipov, I. (2000): *Овцеводство не выдерживает конкуренции [предлагается прогноз эффективности различных моделей развития в краснодарском крае]*, Agricultural Economics, Abstract Journal, vol. 1, p. 219.

15. Ulyanov, A. N., Kulikova, A. Y. (2013): *Актуальные проблемы развития овцеводства России*, Bulletin of the Kuban State Agrarian University, vol. 44, pp. 235-237.

16. Urbanskaya, G. G. (2009): *Конкурентоспособность продукции овцеводства в России и в Оренбургской области*, Economics of Agriculture, no. 1, p. 218.

17. Yuldabashev, Y. A., Lescheva, M. G. (2011): *Проблемы активизации инновационной деятельности в современном овцеводстве*, Achievements of Agricultural Science and Technics, vol. 11, pp. 6-8.

RELATIONS, INTERACTIONS AND NETWORKS OF CULTURAL TOURISM STAKEHOLDERS IN RURAL AREAS OF VOJVODINA

Nataša Pavlović[1], Sandra Medić[2], Aleksandra Tešić[3]

Summary

Contemporary trends, which are characterized by a very strong level of competition and the maturity of the market, become more than ever essential for success of tourist destinations. Rural areas in Vojvodina, because of its authentic atmosphere and multiculturalism, have significant advantages for cultural tourism. Each participant who creates a tourism product in today's competitive environment aims to have a strong focus on customer satisfaction, which indicates the necessity of adopting the concept of total relationship marketing.

The aim of this paper is to show how cultural institutions, souvenir craftsmen, tourism organizations, travel agencies and other stakeholders achieve cooperation and apply modern concept of total relationship marketing for the purposes of satisfying the needs of tourists.

The paper will explore the fundamental postulates of relationship marketing applied by key stakeholders of cultural tourism in rural areas, and will get reference results on relations, interactions and networks.

Key words: *total relationship marketing, cultural tourism, rural areas.*

JEL: *M31, Q01, Z1*

Introduction

Rural destinations, where the integration tourism, farm, local resources, culture and natural environment are present, are attractive, as culture and tourism become resources for socioeconomic development of these areas (Mc Donald, Jolliffe, 2003). Serbia has around 85% rural areas, which makes it one of the least urbanized countries in Europe. Rural

---

1   Nataša Pavlović, M.A., deputy director, Tourism organisation of Vojvodina, Bulevar Mihajla Pupina no. 6, 21000 Novi Sad, Serbia, Phone: +381 63 444 184, E-mail: nts.pavlovic@gmail.com

2   Sandra Medić, M.Sc, expert independent associate, Tourism organisation of Vojvodina, Bulevar Mihajla Pupina no. 6, 21000 Novi Sad, Serbia, Phone: +381 63 535 599, E-mail: medics.ns@gmail.com

3   Aleksandra Tešić, Ph.D., Associate Professor, Business Academy University, Faculty of Economics and Engineering Management, Cvećarska 2, 21000 Novi Sad, Phone: +381 69 2000 954, E-mail: prof.aleksandra.tesic@gmail.com

areas in Serbia, as well as in Vojvodina have shortage of available jobs, which influences depopulation and abandonment of the villages. The role of tourism, and its' multiplicative effects gives the opportunities for employing the population in additional activities, beside agriculture. Also, this way the tourism involves the community in keeping traditional customs and products. Rural tourism, as a combination of different forms of tourism that showcase rural life, art, culture and heritage in rural locations, is extremely suitable for diversifying Serbian rural economy. One of the reasons for traveling to a rural destination is to get familiar with local population and their tradition. Also tourists, who are visiting those kinds of destinations, usually take part in different activities like recreation, making handcrafts or they are participants in some local event. The customs and cultural heritage of local community have an important role in creating such a touristic product.

According to Tylus (2012) the role of culture in development should be treated as multi-layered: on the one hand as an intrinsic value, secondly as a real factor of regional development leading to increased attractiveness of regions for tourists, residents and investors, thirdly, as an active factor of social development based on knowledge, tolerance and creativity.

Because it is quite a complex demand to be met, cultural tourism has a lot of stakeholders with diverse interests. On one hand, there are accommodation, restaurants, shops, cultural institutions, cultural centers, travel agencies, tourism organizations etc. On the other hand, there is a local community and local government. Only together they can provide authentic offer for visitors and tourists.

The potential of tourism development in Vojvodina lies in rich and varied resources, which consist of natural, cultural and historical attractions. In the recent years, traditional farm house called "salaš" became the most popular tourist attraction, with the authentic appearance. Today they are keepers of their time and a traditional way of life, and as such are attracting the attention of tourists. These farm houses, and villages of Vojvodina in general, are suitable for family and active holidays, and for people who love to spend time outdoors. The offer is created with authentic accommodation, local cuisine and traditional events. The rural areas in Vojvodina are filled with ethno-social features, which are special and very attractive for the group of cultural tourist and very important reason why people visit farm houses and villages of this region.

Large number of villages in Vojvodina is in the vicinity of valuable cultural and historical monuments. Regarding the rich cultural tradition, rural areas offer a strong cultural identity, which could be used as an important developmental factor of tourism and villages (Stojanović, 2008). Events and festivals are essential for the cultural identity of local community. In Vojvodina, there are more than 1,000 events during one year and most of them are originally created to celebrate the various local events and traditions, such as harvest, gastronomy and customs. Initially they were planned to serve and entertained local people, but with the awareness of economic benefits, the majority of rural communities could expand the scope of activities which could bring visitors to the events. Economic potential of cultural tourism could be optimally used through strong

establishment of relations, interactions, and networks between adequate tourism offer and appropriate consumers.

Successful development of cultural tourism in rural areas of Vojvodina depends of strategic collaboration which includes wide spectrum of stakeholders. Effective partnerships of private and public sector are a base for sustainable development.

Relationship marketing has become a term that is widely used in recent years. It is the subject of serious discussion and research by scholars, as well as those who use it in marketing practice. The last decade of XX century marked the importance of the relationship, i.e. relationships in marketing theory and practice, and it was in this period that marketing relationships established as a term, which is primarily related to marketing services.

The lack of classic marketing paradigm is that it starts from marketing as primarily marketing physical products. This approach showed its weaknesses, especially in the areas of marketing services (Ljubojević, 2002). For this reason, many scientists have begun to deal with the marketing of services, especially since the period of the nineties of the XX century was marked by the dominant role of services in the creation of the gross domestic product of many countries.

Relationship marketing represents paradigm of changes which take place in marketing practice. Changes are mainly related to shift from the focus at transactions to the focus at relationships. Relationship approach points out relationship continuity which is to be developing between organization and its consumers, with main focus at consumer services and standards of quality. Application of relationship marketing assumes developing relationships not only with consumers but also with distributors, suppliers, public institutions, individuals, etc. (Ćosić, Đurić, 2010).

Relationship marketing has become a unifying force within marketing. Mattsson (1997) suggested that here at last there was a concept within marketing research that served as the generic context for all marketing transactions, whether products or services, consumer or industrial. This viewpoint was supported by Sheth and Parvatiyar (2000) who suggest that the scope of relationship marketing was wide enough to cover the entire spectrum of marketing's sub-disciplines including "channels, business-to-business marketing, services marketing, marketing research, customer behavior, marketing communications, marketing strategy, international marketing and direct marketing". Grönroos (1996) believed that relationship marketing represented the biggest change in 50 years, in effect "taking marketing back to its roots".

Relationship marketing (RM) is usually defined as an approach to develop long-term loyal customers and thus increasing profitability. Definition of Gummesson is more generic: Relationship marketing is interaction in networks of relationships (2008).

This paper considers cultural aspects of rural tourism potentials in Vojvodina that holds a vast attractive heritage and creates the conditions for preservation of structural and spiritual identity of the villages in this region. The aim of this paper is to emphasize the

importance of cooperation between key stakeholders and their adoption of relationship marketing concept in order to satisfy visitors of cultural heritage in rural areas in Vojvodina. In this way, through the contemporary paradigm, possibilities will be suggested for cultural tourism enhancement and rural development.

Theoretical background

Potential tourists in rural tourism, who are in most cases from the urban areas, define the rural character of the area primarily by the level of traditionalism, as well as general social values that do not exist in urban centers. Rural areas are characterized as areas with strong sense of community, local, not a cosmopolitan way of life, which is "slower", less materialistic and less "complicated" than in urban areas (Popesku, 2014). The growing interest of modern tourists for the cultural heritage emphasizes the importance of these characteristics of rural areas.

There are lots of definitions of cultural tourism. Some of them are derived from tourism, and some of them are based on experience of tourists. On the one hand, they emphasize objects of cultural heritage, their consumption and need for protection, and on the other, they involve tourists themselves and their motivation and experiences. In previous decades there have been many attempts to produce definitions of cultural tourism, but the essence remains fairly simple: cultural tourism involves cultural consumption by people while travelling (Richards, 2013).

The important characteristics of rural tourism are tourists' life in a rural community, participation in daily activities of the hosts, exploring the customs of the villagers, their folklore, music and cultural values. Therefore, connection of rural tourism with cultural tourism is very clear.

Two effects of investments undertaken in the field of culture can be distinguished. One of them is the expansion of the regional economic base that comprises an impulse for further development. This development is expressed by improvement of the market and marketing situation of existing commercial entities (e.g. a positive change in a region's image), improvement in the standard of living of residents (expansion of the cultural infrastructure and increased access to culture) as well as an increase in the number of jobs associated with the investment realization process, and then with the functioning of new elements of a region's fixed assets. The second effect results from the stimulating impact of public expenditures by income – demand multipliers. Increasing the income of commercial entities and households, these expenditures stimulated additional demand, which has a large impact on local markets of goods and services (Tylus, 2012).

Local culture provides a sense of identity for communities and residents. This identity facilitates mutual understandings, traditions, and values that are all central to identifying plans of action to improve overall well-being of the community. Culture contributes to building a sense of local identity and solidarity. It influences the confidence that communities have for coming together to address specific needs and problems. This local commitment among residents, regardless of economic or political conditions, can serve as

a valuable tool in shaping the effectiveness of development options and local actions. Such commitment, based on culture and common identity, can be seen as a potentially important tool in sustaining local government, development, and social improvement efforts. The inclusion of culture into community and economic development models can take many shapes and forms. Culture can serve as the central focus. Tourism would be included as well as other efforts that focus largely on the promotion, preservation, or enhancement of local or regional cultures. Examples of cultural preservation or efforts focusing solely on culture are often seen in relation to tourism and conservation efforts. This includes renovation of villages (architectural rehabilitation), highlighting the architectural heritage of an area (restoring historic sites to serve as a focal point for tourists), cultural venues (local heritage centers and traditional cultural events), traditional craft and artistic skills (development of industry and employment based on producing crafts that symbolize local culture), and cultural-based entertainment and cultural dissemination (organization of cultural activities, festivals, and permanent exhibitions) (Brennan et al., 2005).

According to McKercher (2004) museums are the most popular cultural attractions, together with galleries and monuments. They have very important role in keeping cultural diversity, education, social cohesion, personal development. They also promote an integrated approach to cultural heritage and preserve the community's identity. They also stimulate the economy, increase employment and income. Unfortunately in the past 20 years, due to the crisis in Serbia and Vojvodina, cultural institutions and cultural identity in general have been disregarded despite all of its potential.

Cultural tourism is specific in the terms of a large proportion of tourists' involvement with tourists' consumption and experience in creation of tourism product (Hadžić, 2005). This character of product in cultural tourism, which is mostly partial tourism product, has clear implications for the application of the theory of total relationship marketing, created by Swedish scientist Gummesson (2008).

Relationship marketing theory suggests that the relations are main factor that contribute to the quality of marketing transactions. Traditional markets are extremely powerful, but they also have huge limitations. Appropriate "people to people exchanges" are much richer than the exchange market. Every time when people establish connection with people, or community (rather than market), they do not exchange money for goods only, they share ideas, opinions, information, and beliefs. They also tend to form strong bonds, relationships, loyalty, feelings, commitments, etc. They begin to share and create value. Therefore people whose values are most compatible with those around them, tend to form the most powerful and successful relationships with other people. In literature review it appears that there are many variations in the types of relationships that are believed to exist between the buyer and the seller, and their typology depends on the industry, company, customers themselves, and many other factors. So Palmatier (2008) states that customer relationships do not affect equally all the outcomes of exchange. Gummesson (2008) makes a valiant attempt and tried to classify many of the relationships in his 30 Rs model (Table 1). The philosophy of the concept of the marketing mix has evolved, so it has to date developed thirty defining relations, which represents the new structure of marketing thinking. Classic marketing

relationships (R1-R3) are relations that have so far dealt with the theory of marketing. Special marketing relationships (R4-R17) are partly classic aspects of relations, with some innovations (such as a "customer as member" and other). Mega relationships (R18-R23) are the basis for relationship marketing economy and society, including the mega marketing activities (lobbying, public opinion, and political power), mega alliances (large corporations and associations that characterize the new stage of marketing) and social relations (such as friendship and ethnicity). Nano relationships (R24-R30) are relationships through which the market relations merged to relations within the company.

Table 1. The 30 Relationships of RM - the 30 Rs

Classic market relationships	
1	Supplier and customer
2	The customer - supplier - competitor triangle
3	Network - distribution channels
Special market relationships	
4	Full-time marketers and part-time marketers
5	Customer and service provider
6	Many-headed customer and many-headed supplier
7	Relationship to the customer's customer
8	Close versus distant relationship
9	Dissatisfied customer
10	Monopoly relationship: customer or supplier as prisoner
11	Customer as "member"
12	Electronic relationship
13	Para-social relationships, with symbols and objects
14	Non-commercial relationship
15	The green relationship
16	The law-based relationship
17	The criminal network
Mega relationships	
18	Personal and social networks
19	Mega marketing - the real "customer" is not always found in the marketplace
20	Alliances change the market mechanism
21	The knowledge relationship
22	Mega alliances change the basic conditions for marketing
23	Mass media relationship
Nano relationships	
24	Market mechanisms are brought inside the company
25	Internal customer relationships
26	Quality providing a relationship between operations management and marketing
27	Internal marketing - relationships with the employee market
28	Two-dimensional matrix relationship
29	Relationship to external providers of marketing services
30	Owner and financier relationship

Source: Gummesson, 2008.

Concerning that all Rs are not applicable to each sector, company and each situation, in this paper the authors have made a specific relationship portfolio for the marketing plan of key stakeholders of cultural tourism in rural areas. As Gummesson suggested (2008), we tried to look at marketing as relationships, networks and interaction. This led to the identification of prerequisites for relationship marketing orientation of key stakeholders of cultural tourism in rural areas in Vojvodina region. These prerequisites are customer orientation, e-marketing, internal marketing and "green marketing" and corporate social responsibility (CSR).

We will point out some of the details of the following relations, which are in our opinion of great importance for the successful total relationship marketing in cultural tourism of rural areas. Certainly those are: relationships with tourists, relationships with employees (internal marketing), relations between partners, e-relations and environmental and health issues and CSR.

This is due to the fact that relationship marketing raises the need for customer orientation, and customer orientation raises the need for customer-oriented employees. The latter can be achieved through internal marketing. Customer orientation implementation doesn't exist without customer oriented employees, because they are the ones that have to make it happen. If there were no customer orientation (which leads to customer satisfaction), there would be no relationship marketing because unsatisfied customers will never develop good relationships with the business (Engel et al., 1995).

Also, strong partnership, which is based on personal network and interaction between key stakeholders builds strong long-term relations and improves business and strengthens tourist destinations (in this case cultural heritage in rural areas of Vojvodina).

IT creates a new tool for every sector and for tourism as well, and offers new opportunities for marketers. Most people find new destinations through Internet. Electronic relationships or e-relationships embrace relationships, networks and interaction based on IT. Like e-CRM, e-relationships have appeared throughout the text, naturally as today they exist in some form in all company, consumer and citizen activities (Gummesson, 2008). The research uncovers findings that elevate possibilities for adoption of "green marketing" relative to sustainable tourism business.

Methodology and Data Collection

In order to conduct this survey, the Questionnaire was distributed via e-mail to 327 companies across the Vojvodina region during March and April 2014. It included tourism organizations, receptive travel agencies, museums, galleries, cultural centers, ethno houses, civil organizations, event managers, farmhouses, vineries, craftsmen and accommodation facilities in rural areas. Potential respondents were given a brief description of the meaning of the survey, and it was emphasized that this research included only visitors who were coming to rural areas for the cultural motives. Each respondent was then asked to answer the questions in the questionnaire on the basis of his or her personal experience.

According to relevant literature and informal interviews with experts in cultural and rural tourism, authors developed a Questionnaire which was designed and divided into three sections. The questions were structured and close-ended. The first section was about basic company data, the type of company, number of employees and business existence. The second part was about socio-demographic data of respondents, gender, age, experience, education, occupation and position in the company. The final, third part was about relations with visitors, relations and interaction with key stakeholders and networks. The part "relations with visitors" included questions about customer orientation. Then part "relations and interaction with key stakeholders" included questions about database about visitors, loyalty programs, connections and co-operations with stakeholders in cultural tourism and consideration of social environment. The part about networks included questions about usage of personal and professional connections in business, lobbying, inter-sector cooperation, clustering or making alliances and cooperation with media.

The choice of the Questionnaire design was based on the focus of the research. The focus of the research was to measure the attitude of the key stakeholders towards the relationship marketing orientation concept, some of the components and its implementation as base for the developing a guideline for successful relationship marketing orientation (Giljam, Granberg, 1993). All items were assessed on a 5-point Likert-type scales ranging from 1 (strongly disagree) to 5 (strongly agree).

Analyses were conducted to assess reliability and validity of the research (Table 6.). The Cronbach's alpha for each of the three components ranged from 0.857 to 0.898, which are regarded as acceptable for basic research (Nunnally, 1978). Since all α values are over 0.85, the constructs used are considered as reliable.

Results and discussion

Of the 327 questionnaires that were distributed, 91 completed questionnaires were returned (a response rate of 28.4%). The Questionnaire was distributed to 33 tourism organizations,17 receptive travel agencies, 18 museums, 9 galleries, 25 cultural centers, 26 ethno houses, 103 event managers, NGO's and civil organizations, 35 farmhouses, 26 craftsmen, 44 accommodation and food and drink facilities in rural areas. The percentage of types of companies among respondents can be seen in the Table 2.

Table 2. Percentage of types of companies among respondents

Respondents	Frequency	Percent (%)
Cultural centers	11	12.1
Museums	7	7.7
Galleries	2	2.2
Ethno houses	4	4.4
Tourism organizations	16	17.6
Receptive travel agencies	6	6.6
Farmhouses	2	2.2
NGO, civil associations	12	13.2
Accommodation facilities	8	8.8

Respondents	Frequency	Percent (%)
Food and drink facilities	11	12.1
Event managers	6	6.6
Craftsmen	5	5.5
Other	1	1.1
Total	91	100

Source: Pavlović, Medić, 2014.

Among respondents, 76% were represented micro and 16.5% small entrepreneurs. Their companies are relatively new or they have long tradition, 37.4% was the companies with experience up to 5 years, 27.5% was more than 21 years old, from 6 to 10 years there were 24.2% companies and finally with 7.7% was the companies with experience from 11 to 20 years.

Most employees in the survey are women (56.2%), whereas there are 43.8% men. Out of 91 respondents who were included in the analysis, 42.2% are aged between 36 and 45. As far as education level is concerned, there are 37.4% who have high school education and 29.7% graduated from university. Then 36.4% have work experience in tourism lasting between 6 and 10 years. More detailed analysis can be seen in Table 4. Total sum of respondents, in the table below, vary for different characteristics of respondents (gender, age, education etc.) because in some questions we had missing data, but without any significant discrepancies.

Table 3. Selected socio-demographic characteristics of the samples

Characteristics	Groups	Frequency	Percent	Valid Percent
Gender	man	39	42.9	43.8
	woman	50	54.9	56.2
	Total	89	97.8	100
Age	18-35	28	30.8	31.1
	36-45	38	41.8	42.2
	46-55	13	14.3	14.4
	56-65	8	8.8	8.9
	over 66	3	3.3	3.3
	Total	90	98.9	100
Education level	high school	34	37.4	37.4
	bachelor	25	27.5	27.5
	faculty	27	29.7	29.7
	master/magister	5	5.5	5.5
	Total	91	100	100
Work experience	≥ 5 years	26	28.6	29.5
	6-10 years	32	35.2	36.4
	11-20 years	23	25.3	26.1
	≤ 21 years	7	7.7	8.0
	Total	91	100	

Characteristics	Groups	Frequency	Percent	Valid Percent
Vocation	manager	15	16.5	16.5
	manager in tourism	17	18.7	18.7
	economist	21	23.1	23.1
	manager in culture	2	2.2	2.2
	caterer	5	5.5	5.5
	law	3	3.3	3.3
	other	28	30.8	30.8
	Total	91	100	100
Position in company	owner	20	22	22.5
	high management	31	34.1	34.8
	medium and low management	12	13.2	13.5
	employees	17	18.7	19.1
	occasionally employed	3	3.3	3.4
	other	6	6.6	6.7
	Total	89	97.8	100

Source: Pavlović, Medić, 2014.

This research gave positive results concerning adoption of three main characteristics of total relationship marketing. Regarding relations with visitors, most respondents gave the answer 4 (I agree) on Likert scale and we can conclude that those relations are an important part of marketing activities of key stakeholders of cultural tourism in rural areas of Vojvodina. Relations and interaction with others who are creating cultural tourism offer in rural areas are also valued as a significant activity (concerning that Mode=5, Mean=4.03). We can say that respondents adopted network as a marketing strategy according to the results (Mode=4, Mean=3.83). These results were confirmed by high ranking evaluation on the scales.

Table 4. Descriptive Statistic (N=91)

Principles of TRM	Minimum	Maximum	Mean	Mode	Std. Deviation
Relations	1	5	4.21	4	.739
Interactions	1	5	4.03	5	.633
Networks	2	5	3.83	4	.607

Source: Pavlović, Medić, 2014.

For the purposes of determining the empirical relationship between variables and groups, we used the results of established correlations which are shown in Table 5 and 6. For the purposes of this paper, we analyzed only statistically significant results.

Table 5. The matrix of correlation coefficients

Principles of TRM	Size of company	Company existence	Work experience of respondents
Relations with visitors		-.340**	.226*
Interactions with key stakeholders		-.323*	
Networks	.218*		
*.Correlation is significant at the 0.05 level (2-tailed) **. Correlation is significant at the 0.01 level (2-tailed)			

Source: Pavlović, Medić, 2014.

It was shown that the size of company correlates with the usage of network as marketing strategy. The bigger the company, the more personal and professional networks are established with other companies, institutions, investors, NGO, media etc.

Concerning the correlation between relations with visitors and company existence, it could be seen that there is a significant correlation at the 0.01 level (2-tailed). This means that with increasing time of company existence (period of doing business) relations with visitors become weaker. That could be explained with the fact that older companies /organizations are less committed to establishing relations with visitors who are coming to rural areas for cultural reasons. They probably have loyal customers and well developed relations with them, so they put less effort to attract, maintain and established long-term relationships with visitors. The same situation is with the influence of company existence on interaction with key stakeholders (correlation is significant at the 0.05 level (2-tailed)). We assumed that older companies are less committed to interact with others, because they have already relatively developed those kinds of relations.

Finally it was shown that work experience of respondents correlate with usage of relations with visitors as marketing strategy (correlation is significant at the 0.05 level (2-tailed)). As expected, the respondents, who have more work experience in tourism, are more committed to the relations with visitors.

The scales of relations, interactions and networks measure aspects of the same phenomenon, so it was logical that they are highly correlated (Table 6).

Table 6. The matrix of correlation coefficients

Principles of TRM	Relations	Interactions	Networks
Relations	1 (α = 0.860)	.792**	.462**
Interactions		1 (α = 0.898)	.657**
Networks			1 (α = 0.857)
**. Correlation is significant at the 0.01 level (2-tailed)			

Source: Pavlović, Medić, 2014.

Relations with visitors and relations and interactions with key stakeholders have significant correlation (correlation is significant at the 0.01 level (2-tailed)). The more respondents use relations with visitors, the more they are establishing relations and

interactions with key stakeholders. Almost the same situation is with two other scales. They all have high value of correlations and according to Cohen the values above 0.5 represent high correlations (1998).

Conclusions

In order to conduct this survey the Questionnaire was distributed to 327 companies across Vojvodina region during March and April 2014. It included main tourism stakeholders which are dealing with cultural tourism in rural areas, such as tourism organizations, receptive travel agencies, museums, galleries, cultural centers, ethno houses, civil organizations, event managers, farmhouses, vineries, craftsmen and accommodation facilities in rural areas of Vojvodina.

Our research findings provide support for our theoretical concept and predicted relationships, interactions and networks between key cultural tourism stakeholders in terms to improve cultural tourism offer and local development in rural areas. The main results have shown that they are aware of importance of using total relationship marketing in terms of improving their business. The older the company/organization the relations with visitors are weaker. This could be explained with the fact that they are less committed to establishing relations with visitors, who visit rural areas for cultural reasons, because they have probably loyal customers and well developed relations with them, so they put less effort to attract, maintain and establish long-term relationships with visitors. The same situation is with the influence of company existence to interaction with key stakeholders. We assume that older companies are less committed to interact with others, because they have already relatively developed those kinds of relations. Also, it was shown that work experience of respondents correlates with the usage of relations with visitors as marketing strategy. As expected, the employees, who have more work experience in tourism, were more committed to the relations with visitors. Finally, the bigger the company, the more personal and professional networks are established with other companies, institutions, investors, NGOs, media etc.

Due to small number of respondents and return of the questionnaires, the obtained results were only indicative and they could serve as a good example and possible starting point for further research. Also, our research included opinions and attitudes of key stakeholders of cultural tourism in rural areas without measuring usage of CRM. Through applying of CRM concept further research could analyze attitudes and perceptions of visitors in rural areas. The main goal could be their confirmation and evaluation of total relationship marketing adoption. Finally, we recommend more detailed investigation of adoption of 30Rs in companies or organization's marketing strategies.

Modern concept of total relationship marketing is used in many sectors which is result of globalization process and transformation of traditional to relational marketing. The main principles of this concept are customer relationship management and establishment of long term relations, interactions and networks with customers and other partners involved.

Complex tourism structure imposes the necessity of marketing orientation to total relationship marketing. As market becomes more competitive, a greater understanding of total relationship

marketing will become more important. Cultural tourism is undoubtedly one of those types of tourism whose development includes a wide range of partners. Its successful development depends largely on their good cooperation.

Rural economies in Vojvodina are faced with a number of opportunities, also challenges in becoming more competitive and sustainable. Despite this fact, the cultural heritage and potentials of rural areas still were not sufficiently valued and promoted in the past, because there was no consensus between stakeholders within these destinations. Even they are aware of beneficiaries of usage and adoption of contemporary marketing concepts, still there is absence of real process of relations, interactions and network.

Rural tourism can help lead the way to a more diversified rural economy while creating jobs and increasing income, since tourism enhances the local economy by offering opportunities for locally-processed products, handicrafts and souvenirs. This requires balance between agricultural production and other economic activities, environmental protection, and social development. Sustainable rural tourism is one of the key sectors with strong potential for diversifying rural economy. In Vojvodina, in the past several years a movement has been developing toward sustainable rural tourism that tackles the threats of unmanaged tourism. Sustainable tourism views tourism within destination areas as a relationship between host areas and their communities and people, tourists, and the tourism industry. Sustainable tourism minimizes environmental and cultural damage, optimizes visitor satisfaction, maximizes long-term economic growth, and balances tourism growth potential and the conservation needs of the environment. The research results indicated that the familiarity of stakeholders in the modern marketing concept whose fundamental principles are based on relations, interactions and networks, should be the foundation and stronger directions for cultural tourism development and identity building of the region, and thus affect the local and economic development of rural areas in Vojvodina.

References

1. Brennan, M., Kumaran, M., Cantrell, R., Spranger, M. (2005): *The Importance of Incorporating Local Culture into Community Development*, University of Florida, available at: http://edis.ifas.ufl.edu/fy773, accessed at: 05.10.2014.

2. Cohen, J. W. (1988): *Statistical power analyses for the behavioral sciences*, 2nd edition, Lawrence Erlbaum Associates, USA.

3. Ćosić, M., Đurić, M. D. (2010): *Relationship marketing in the tourist services sector,* UTMS Journal of Economics, vol. 1, no.1, pp. 53-60, University of Tourism and Management, Skopje, Macedonia.

4. Engel, J. F., Blackwell, R. D, Miniard, P. W (1995): *Consumer behavior*, 8th Edition, Harcourt, Orlando.

5. Giljam, M., Granberg, D. (1993): *Should we take don't know for the answer?* Public opinion quarterly, Oxford Journals, vol. 57, issue 3, pp. 348-357, Oxford.

6. Grönroos, C. (1996): *Relationship approach to the marketing function in service contexts,*

Journal of Business Research, vol. 29, no. 1, pp. 7–13, Elsevier, Boston.

7. Gummesson, E. (2008): *Total Relationship Marketing*, 3th Edition, Butterworth-Heinemann, Oxford.

8. Hadžić, O. (2005): *Primena koncepcije marketinga totalnog odnosa u kulturnom turizmu*, magistarska teza, Prirodno-matematički fakultet, Univerzitet u Novom Sadu, Srbija.

9. Ljubojević, Č. (2002): *Marketing usluga: Put ka potpunoj satisfakciji potrošača*, Stylos, Novi Sad, Srbija.

10. Mattsson, L. G. (1997): *Relationship Marketing and the Markets-as-Networks Approach–A Comparative Analysis of Two Evolving Streams of Research*, Journal of Marketing Management, vol. 13, no. 5, pp. 447-462.

11. Mc Donald, R., Jolliffe, L. (2003): *Cultural Rural Tourism-Evidence from Canada*, Annals of Tourism Research, vol. 30, issue 2, pp. 307-322, Elsevier, Great Britain.

12. McKercher, B. (2004): *A comparative study of international cultural tourists*, vol. 11, no. 2, pp. 95–107, Journal of Hospitality and Tourism Management.

13. Nunnally, J. C. (1978): *Psychometric theory*, 2nd edition, McGraw-Hill, New York.

14. Palmatier, R. W. (2008): *Relationship Marketing*, Marketing Science Institute, Cambridge.

15. Pavlović, N., Medić, S. (2014): *Istraživanje relacija, interakcija i mreža ključnih stejkholdera kulturnog turizma u ruralnim područjima Vojvodine*, anketno istraživanje, Novi Sad.

16. Popesku, J. (2014): *Ključna pitanja razvoja ruralnog turizma*, available at: http://www.cenort.rs/?page_id=78, accesed at: 15.03.2014.

17. Richards, G. (2013): *Routledge Handbook of Cultural Tourism,* Routledge, London.

18. Sheth, J., Parvatiyar, A. (2000): *Handbook of Relationship Marketing*, Sage Publications, California.

19. Stojanović, V. (2008): *Priručnik za seoski turizam*, poglavlje Prirodno okruženje i autentična kultura u seoskom turizmu, str. 57-78, Valjevo, Srbija.

20. Tylus, K. (2012): *Culture as a Factor of Social and Economic Development - The Polish Experience,* available at: http://poieinkaiprattein.org/economy/culture-and-economy/culture-as-a-factor-of-social-and-economic-development---the-polish-experience-by-karolina-tylus, accessed at: 05.10.2014.

RELACIJE, INTERAKCIJE I MREŽE STEJKHOLDERA KULTURNOG TURIZMA RURALNIH PODRUČJA VOJVODINE

Nataša Pavlović[4], Sandra Medić[5], Aleksandra Tešić[6]

Rezime

Savremeni tržišni uslovi, koje karakteriše izuzetno jak nivo konkurencije i zrelost većine tržišta, više nego ikada do sada, postaju suštinska pitanja uspešnosti turističkih destinacija. Ruralna područja u regionu Vojvodine zbog svoje multikulturalnosti imaju izrazite konkurentske prednosti na tršištu kulturnog turizma. Svaki učesnik koji kreira turistički proizvod u današnjem konkurentskom okruženju ima za cilj da se snažno usredsredi na satisfakciju potrošača, što ukazuju na neophodnost primene koncepta marketinga totalnog odnosa.

Cilj ovog rada je da prikaže na koji način ustanove kulture, proizvođači suvenira, turističke organizacije, agencije i ostali nosioce kulturne turisitčke ponude ostvaruju međusobnu saradnju i primenjuju savremeni koncept marketinga totalnog odnosa u svrhe zadovoljenja potreba potrošača - turista.

Putem ankentnog upitnika u radu će se istražiti osnovni postulati marketing odnosa koje primenjuju ključni stejkholderi kulturnog turizma u ruralnim područjima i dobiti referentni rezultati o relacijama, interakcijama i mrežama.

Ključne reči: *marketing totalnog odnosa, kulturni turizam, ruralna područja.*

4   Nataša Pavlović, Mr, zamenik direktora, Turistička organizacija Vojvodine, Bulevar Mihajla Pupina 6, 21000 Novi Sad, Srbija, Telefon: +381 63 444 184, E-mail: nts.pavlovic@gmail.com

5   Sandra Medić, M.Sc, samostalni stručni saradnik, Turistička organizacija Vojvodine, Bulevar Mihajla Pupina 6, 21000 Novi Sad, Srbija, Telefon: +381 63 535 599, E-mail: medics.ns@gmail.com

6   Prof. dr Aleksandra Tešić, Vanredni profesor, Univerzitet Privredna akademija, Fakultet za ekonomiju i inženjerski menadžment, Cvećarska 2, 21000 Novi Sad, Telefon: +381 69 2000 954, E-mail: prof.aleksandra.tesic@gmail.com

ALTERING THE USE OF AGRICULTURAL INTO CONSTRUCTION LAND - PRACTICE AND TRENDS

Milan Počuča[1], Bojana Drašković[2]

Summary

Preservation of agricultural land as an imperative of prosperity of agriculture of the Republic of Serbia needs to be observed through causal questions as well, such as change of purpose of agricultural land into construction land, which is necessarily followed by conversion, a decade-long problem. Insufficiently resolved current questions of the aforementioned within legislative framework open up the possibility for improper use and exploitation of agricultural land. It is necessary to regulate the issue of conversion of construction land by legislative regulations i.e. altering use rights into property rights on construction land, and by doing so, open the way to investments in the Republic of Serbia. With the analysis of the effects of conversion and the adoption of a special law on this issue, construction activity would further prosper. The aim of this paper is to assess adequately the current problems of consumption, preservation and actual implementation of transferring agricultural land to construction land, with a view of the facts, practices and tendencies.

JEL: *K11, Q15*

Key words: *agricultural land, construction land, repurposing, conversion, urbanization.*

Introduction

Seeing as how Republic of Serbia extends to about 8,840,000 acres, out of which 6,000,000 acres are agricultural land, we note that 70% of its total area is exploited for agricultural purposes. Moderate continental climate and favorable climate conditions represent a prerequisite for development of agriculture, and therefore the prosperity of agricultural land. However despite this fact, the "disappearance" of agricultural land represents an often occurrence in the Republic of Serbia. Annually between 6,000 and 30,000 hectares

---

1   Počuča Milan, Ph.D., Full Professor, University Business Academy, Law Faculty for Economics and Justice in Novi Sad, Geri Karolja Street no. 1, 21000 Novi Sad, Serbia, Phone: +381 21 400 499, E-mail: pocucabmilan@gmail.com

2   Drašković Bojana, Ph.D., Associate Professor, University Union Nikola Tesla, Faculty for Construction management, Cara Dušana Street no. 62-64, 11000 Belgrade, Serbia, Phone: +381 11 2180 287, E-mail: bdraskovic@krstarica.com

of agricultural land "disappear" due to urbanization, infrastructure construction and excavation sites, therefore it is necessary to adequately protect the best land through legislative framework with the application of modern technologies for preservation without disturbing its natural properties. Aware of the fact that in recent years agricultural land has not been adequately treated and used, and seeing as how positive legal regulations, namely the Agricultural Land Law (Official Gazzete of the Republic of Serbia, no. 62/2006, 65/2008, - other law and 41/2009) dictate otherwise, we come to a conclusion that Serbia has a huge percentage of neglected and unused land. Ignoring concerns on the quality and consumption of agricultural land in the legitimate manner leads to growth of percentage of uncultivable surfaces.

"Accelerated investment in the transition process, which is shaking the entire geographical system of Serbia, is primarily directed towards inexpensive agricultural land, especially around big cities." (Stojkov, 2007)

It is necessary to adopt adequate laws and bylaws and documents that would be in favor of the stand that it is necessary to invest and preserve agricultural land as the primary item for prosperity of the Republic of Serbia." In an effort to be as clear, traces the direction of future reforms of the agricultural sector within external and internal challenges that it faces, as well as to define the measures and activities for Reconstruction and activate the development potential of rural areas, the Ministry of Agriculture and Environmental the environment has initiated the preparation of a strategic document." (*Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia*, Draft Strategy for Agriculture and Rural Development of Serbia 2014-2024. November 2013, Official Gazette of Republic of Serbia (OGRS), no. 85/2014)

Methodology and Data Sources

In the course of recent years, current legislation of the Republic of Serbia in the area of construction and agriculture exists despite the under-resolved current issue of preserving agricultural land as a necessity for prosperity in the RS.

Goals - The goal of this paper is to perceive the necessary factors which necessarily lead to the solving of current problems of preserving agricultural land with the possibility of performing change of utilization from agricultural to construction land in the RS. With an overview of the state of facts and legal framework of the RS in these areas we find that the best way to point out the necessity of systematization and appropriate use as well as exploitation of agricultural land when it comes to Republic of Serbia is through the abovementioned methods as well as access roads to the current issues.

Methodology - When we were applying dogmatic-normative method during the period of writing the paper, we found that an indication was made on solutions for applying certain legal postulates as well as the layout of legal regulations in the fields of agriculture and construction when it comes to the repurposing of agricultural land to building land. Through this method it was possible to identify the necessary legal interventions in the positive legislation of the RS in these areas when it comes to preservation of agricultural land and the issue of transferring

the same. Usage of an analytical method was to analyse the effects of existing positive-legal solutions on the matter and thereby justify the interventions necessary to amend the applicable legal provisions. Through usage of comparative method when analysing current laws in the field of civil engineering on one hand, and legal solutions in the field of agriculture on the other, findings that corroborate the doubt of inadequacy of legal solutions in terms of preserving agricultural land as a primary parameter of agricultural development in the RS arose. Usage of the above methods while writing this paper indicated that the preservation of agricultural land is an imperative for the prosperity of the Republic of Serbia, which is viewed through causal issues of repurposing of agricultural to construction land, with conversion as the current problem.

Data Sources **-** Valid legal documents were analysed in these areas, (*Law on Agricultural and Rural Development,* OGRS no. 41/2009 and 10/2013; Agricultural Land Law, OGRS, no. 62/2006, 65/2008, - other laws and 41/2009; *Law on Forests,* OGRS no. 30/2010; *Law on Public Property,* OGRS no. 72/2011, 88/2013 and 105/2014; *Law on Planning and Construction,* OGRS no. 72/2009, 81/2009 - corr., 64/2010 – decision US, 24/2011, 121/2012, 42/2013 - decision US, 50/2013 – decision US, 98/2013 – decision US, 132/2014 and 145/2014) which have, alongside articles on legal solutions, shown the best process of transformation of agricultural into construction land, with the conversion as ancillary question, as well as a review on the prosperity of agricultural land and its tendencies.

Spatial and urban planning - general and sectoral policies

Spatial and urban planning needs to be viewed through one of the forms of social regulation mechanisms of spatial development of the Republic of Serbia. Planning, general and sectoral policies of the Republic of Serbia have, through market mechanisms of social control i.e. through social systems management according to preset criteria determined and set the standards and norms of urban and spatial planning. General goals with the analysis of existing resources for their preservation through prejudicial strategy for the way of managing these processes for the achievement of objectives represent a rough definition of spatial planning with its intensification after the Second World War. It would be beneficial to state that the first law which referred to provisions and determined the necessity for cities to have their expansion plans was passed in Sweden in 1874.

The reason for necessity of plans that will regulate the area were represented through different objectives, and are best viewed through justification by political-economic and social demands of socio-political and social organization of a country, with necessary processes of urbanization and industrialization. Spatial planning topic at its inception was represented in the Construction Law of the Kingdom of Yugoslavia in 1931 and was at the time separated from the construction topic.

In developed countries, for planning spatial and urban prosperity a method which characterizes the functioning of the system rather than development as growth instead of quality changes is applied. Implementation of this method exclusively relates to the planning and realization of space with the necessary communication activity, and in methodological sense, ecological

and economic and social satisfaction in applying these methods. In order for a space to be urbanized adequately with the adoption of urban planning documents we must satisfy historical, as well as physical and social aspects.

The current Law on Planning and Construction (OGRS no. 72/2009, 81/2009 - corr., 64/2010 - decision US, 24/2011, 121/2012, 42/2013 - decision US, 50/2013 – decision US, 98/2013 - decision US, 132/2014 and 145/2014) with its Article 3 lays down the principles for development and use of space which the legislator has, in a purposeful way integrated in the text of the law and indicated the necessity of applying through their enumeration.

"Planning, development and space use is based on the following principles:

1) Sustainable development through an integrated approach in planning;
2) Balanced territorial development;
3) Rational usage of land by encouraging measures of urban and rural renewal and reconstruction;
4) Rational and sustainable usage of non-renewable resources and optimal usage of renewable resources;
5) Protection and sustainable usage of natural resources and immovable cultural property;
6) Prevention of technical and technological accidents, protection from fire and explosions, protection from natural disasters, elimination of climate change causes;
7) Planning and spatial planning for defence purposes for the country;
8) Compliance with European regulations and standards in the field of spatial planning and space development;
9) Improvement and usage of information technologies which contribute to an improvement of efficiency and effectiveness of public administration in the business of construction;
10) Participation of the public;
11) Preservation of customs and traditions;
12) Preservation of the specificity of the landscape
13) Horizontal and vertical coordination."

(OGRS, art. 3, no. 72/2009, 81/2009 - corr., 64/2010 - decision US, 24/2011, 121/2012, 42/2013 - decision US, 50/2013 - decision US, 98/2013 - decision US, 132/2014 and 145/2014).

Conversion of agricultural into construction land

„Industrial agriculture is unhealthy for the natural environment, climate, our bodies and for the rural economy", (Union of Concerned Scientists, 2014).

Conversion of agricultural into construction land represents the hottest topic in the recent years in Serbia with analyzing the consequences of "imperceptible" changing in the public eye. The essential problem of converting agricultural into construction land, i.e. change of purpose of agricultural land could be observed through the obvious fact that in the

past decade or two, over 200,000 acres of agricultural land has had its purpose changed. Even though the aforementioned is the global trend, with justification of the necessity of infrastructure development at the expense of rural areas and the distribution of the population and respectively their activities necessary for urban development, it leads to withering of large areas of agricultural land at the expense of creation of construction sites. In order for the small and medium-sized agricultural holdings in Serbia to be able to improve their physical and economic performance and become more competitive, it is necessary and perhaps most important for farmers to actively engage in the elimination of their numerous internal constraints, which "lies" in mentality and underdeveloped awareness about ways of future development" (Paraušić, Cvijanović, 2014).

"The main problems of agriculture in Serbia are small and scattered parcels of unfavorable form for agricultural exploitation" (Marošan, Šoškić, 2006).

Current Law on agricultural land makes a clear classification of agricultural land in relation to its quality and it represents the primary parameter for estimation and analysis of the same through strategic assessment of whether the land requires special treatment or not. A very important aspect of repurposing agricultural land is bringing intentions of the obtained construction land in relation to aspects of future construction, and it is important to understand if whether in certain land area, now construction, after the procedure of repurposing will a residential-commercial building be built or an industrial plant which will indicate a variable cost of investments depending on the purpose of the future facility. When we talk about the purpose and manner of construction planning, we must bear in mind that:

"According to the purpose facilities in agriculture can generally be divided into: 1) Facilities for livestock production, 2) Facilities for the storage, maintenance and repair of agricultural machinery and 3) Facilities for preservation and processing of agricultural products" (Tica et al., 2009).

With the adoption of planning documents, which constitute repurposing of land, it subsequently leads to changes in its value, often tenfold. What leads us astray as observers of the process of repurposing is that taking into account the bigger picture we understand that the public sector does not benefit based on the factual situation that agricultural land is repurposed and that it is necessary to protect the public interest in this direction and reduce the space for wrong doing. "Protection of land includes the protection of agricultural land, protection of construction land, mining, geological exploration, and others" (Lilić, 2010). Agricultural Land Law regulates planning and protection of agricultural land and it determines Administration for use of agricultural land.

Any agricultural land which is in accordance with positive legal regulations of the Republic of Serbia is provided or designated as construction land, i.e. planning documents have made possible the repurposing of agricultural into construction land which will exclusively be used for agricultural production until the end of the procedure of reaching the planned purpose. "Agricultural land is matter of general interest and as such protected by Agricultural Land Law, by which the society had decided to protect one of its natural resources and define its purpose" (Avramović, 2004). "By region, the highest percentage of agricultural land is used in Vojvodina (95.70%), followed by the Belgrade region (91.87%), Region Šumadija and

Western Serbia (87.78%) and Region of Southern and Eastern Serbia (77.36%)", (Nikolić-Đorđić, Mutavdžić, 2014).

Citing the Article 15 of the Law on Agricultural Land, it is stated that - "Agricultural land is used for agricultural production and can't be used for any other purpose except in cases and under the conditions stipulated by this law," we see that for the repurposing of agricultural land it is necessary to obtain consent.

In the abovementioned law, we find a foothold that for the consent to be obtained, it is necessary to submit proof of ownership or the right to use agricultural land, as well as proof of payment of the administrative fee, followed by the note from agricultural inspectors on the current situation and the use of land as well as a project for recultivation if repurposing is done for a limited time. Repurposing of agricultural land is only made possible with payment of necessary fees, which of course refers to compensation for the repurposing of agricultural land and its use for non-agricultural purposes. The fee is paid at 50% of the market value of agricultural land on the day of submission of application for repurposing. (See more: *Agricultural Land Law*, SGRS, art. 25, no. 62/2006, 65/2008 – other law and 41/2009). Fee in the amount of 20% of the market value of construction land for repurposing purposes shall be paid on the basis of Article 23 of the said law, paragraph 1, point 3, in all those cases where the general interest is determined as the necessity to change the use with payment of adequate compensation, which in this case is in percentages. Agricultural Land Law and the obligation to pay the fee for repurposing provides in Article 25 what is necessary to be submitted with the request as well as the fact that the obligation of payment and the amount is determined by the decision of the municipality or the City Administration at the request of an interested person or on the order of agricultural inspectors. Agricultural Land Law requires that the request be submitted with the following:

1. Proof of ownership or the right to use the agricultural land;
2. A copy of the plan of the cadastral parcels;
3. Excerpt from the corresponding urban plan on the purpose of cadastral parcels;
4. Approval of the Ministry for repurposing of agricultural land referring to cases where the agricultural land can be used for non-agricultural purposes, namely for creating artificial meadows and pastures on agricultural farmland of 4th and 5th cadastral classes as well as the forest regardless of the class of land, applied as well to the issue of exploitation of mineral resources, respectively on the disposal of hazardous and harmful substances on agricultural land for a limited period of time on a previously obtained receipt of approval from the ministry with a proof of payment of the fee for repurposing of agricultural land.

Means generated from the fee for repurposing represent an income to the budget of the Republic of Serbia in the amount of 60% while 40% are revenues from the local governments on whose territory, the agricultural land whose purpose is changing, is situated.

Exemption from payment of fees for repurposing is foreseen in Agricultural Land Law (See more: *Agricultural Land Law*, OGRS, art. 26, no. 62/2006, 65/2008 – other law

and 41/2009) and it is necessary to specify that interested person, with the request for determining the grounds for exemption from paying the fee submits proof of ownership or the right to use the agricultural land, as well as information about the area for which repurposing is being done, then the conceptual design as well as a copy of the cadastral parcel. In a case of construction of family housing facility it is necessary to submit data on housing conditions as well as members of the family household.

Agricultural Land Law predicts the adoption of agricultural basis of the Republic of Serbia (See more: *Agricultural Land Law*, OGRS, art. 7, no. 62/2006, 65/2008 – other law and 41/2009) and the autonomous region as a planning document that must comply with all other planning documents of the Republic of Serbia and their compliance is understood. Preservation of agricultural land with the necessary processes for prevention of destruction through development and implementation of projects for protection and regulation of agricultural land with a meaningful display of exploitation, presents the basis of application of these planning documents. Justification for adoption and insisting on implementation of agricultural bases can be found in performing the evaluation of suitability for the development and use of agricultural land with an analysis of the level of endangerment as well as creating the necessary conditions for the application of technical-technological and scientific developments in this area. Creation of a long-term strategy of agricultural development in relation to the overall economic and social situation in our country is based on an analysis of the ecological and cultural-historical development of Serbia.

European agricultural policy over the past decade encourages the development of agriculture through incentives and subsidizing farmers per acre and thus stands in the way of degradation of agricultural land in the EU (Karolić, 2012).

Through the available statistical data of the Republic of Serbia, through comparative analysis of domestic agricultural holdings and strategic documents in the field of agriculture, rural development and the standard of living in the REPUBLIC OF SERBIA stand out significant features and characteristics of small and medium agricultural holdings in the above mentioned territory (The Draft Strategy for Agriculture and Rural Development of Serbia 2014-2024, November 2013, Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia, Official Gazette of Republic of Serbia (OGRS), no. 85/2014, National Rural Development Program 2011-2013 of the Republic of Serbia, Official Gazette of Republic of Serbia, no. 15/2011)

Use of agricultural land

As we mentioned in the paper, by positive legal regulations the owner or the user of agricultural land is required to cultivate the agricultural land regularly as well to treat the land with due diligence and following the rules of good agricultural practices. Regarding the use of agricultural land owned by the state, the use can be performed according to the annual program of protection, organization and use of agricultural land, brought upon by the local government. Article 61 of the Agricultural Land Law stipulates that state owned agricultural land could be submitted to usage without payment of fees to educational,

institutions of high education and social institutions in areas appropriate to the activities they are involved with. State owned agricultural land can be given for usage to legal bodies and persons for non-agricultural production for a fee, and the Government of the Republic of Serbia defines and prescribes the conditions, methods and procedures for granting state owned agricultural land for usage in non-agricultural purposes. In addition to providing opportunities for the use of state owned agricultural land to disposal and management, the land can be leased if the annual program of protection, organization and usage of agricultural land plans such an activity. State owned agricultural land is leased by public announcement and initial price for lease in the first round may not be lower than 100% of the market lease for the area in which the land is located, while in the second round it cannot be lower than 70% of market lease (See more: *Agricultural Land Law* OGRS, art. 64, no. 62/2006, 65/2008 – other law and 41/2009). Upon completed payment of lease achieved at public auction, ministry and the lessee conclude a Contract on the lease of state owned agricultural land.

Revenue on state owned agricultural land

Agricultural Land Law (See more: *Agricultural Land Law*, OGRS, art. 72, no. 62/2006, 65/2008 – other law and 41/2009) provides that state owned agricultural land can't be alienated, but the next article of the said law provides that replacement of state owned agricultural land can be converted, i.e. can be replaced for agricultural land owned by individuals and legal entities in the case of enlarging of agricultural land owned by the state. This refers only to cases where state owned agricultural land and agricultural land owned by individuals and legal entities which are replaced have the same market value. It would be beneficial to note that the estimate of the market value of agricultural land is based on data obtained from the competent authority in whose area the land is assessed. Law on Planning and Construction predicts the repurposing of agricultural into construction land and states that the construction land is the land designated by law or a planning document for the construction and usage of buildings as well as the land on which buildings were constructed in accordance with the law. Law on Planning and Construction provides the fee to be paid for the repurposing of agricultural into construction land in case it is foreseen by a special law. Construction land is used exclusively according to the purpose as set forth by a particular planning document. The aforementioned law provides that the purpose of land and way of exploitation of the land is set by planning document while predominant usage of the land is a way of exploiting the land for different purposes, out of which one is predominant (See more: *Law on Planning and Construction*, OGRS, art. 3, no. 72/2009, 81/2009 - corr., 64/2010 - decision US, 24/2011, 121/2012, 42/2013 - decision US, 50/2013 - decision US, 98/2013 - decision US, 132/2014 and 145/2014 - principles for the development and usage of space). Bu putting in effect the planning document which regulates the repurposing of agricultural into construction land, landowners is entitled by the rights and obligations as stipulated by the Law on Planning and Construction as well as all of its bylaws. The above mentioned is applied regardless of the fact that the body responsible for the registration of property and rights has not performed the change in the public book on property records. We state that until bringing the land to the planned purpose it may be used for other purposes.

Construction land can be in all forms of ownership which implies that it can be the property in turnover, stating that in case that construction land is in public ownership, it can be in turnover only under the conditions prescribed by positive legal regulations to which it relates. The right to lease the construction land to public ownership is regulated by Article 86 of the Law on Planning and Construction, where it is stated that the construction land in public ownership can be leased for the construction of facilities for which a building permit is issued temporary as well as in the case of implementation of projects that are of importance to the Republic of Serbia. The lease agreement is concluded for a definite period of time which is no longer than 5 years.

Repurposing of agricultural into construction land is exclusively made on the basis of a planning document by which the intended repurposing is foreseen. The body responsible for the adoption of the planning document shall, within 15 days of its entry into force submit to the body in charge of cadastres the document that contains the list of all cadastral parcels whose purpose changed. The competent authority shall conduct a resulting change and will compile a note on the obligation to pay the compensation for repurposing. This notice of the obligation to pay the compensation for repurposing of agricultural land is stated in a database of real-estate cadastre, where the proof of ownership of property is obtained. Until the land is changed from agricultural in the building above it can be used for agricultural production. On the basis of the Law regulating agricultural landowner of the cadastral parcel where the repurposing of agricultural into construction land has taken place is obliged to pay compensation for the repurposing prior to the issuance of building permits. During the construction of facilities that are of importance for the Republic of Serbia as well as for the construction of public facilities in accordance with the program of development of construction land when the tax payer is the Republic of Serbia, the fee for repurposing of agricultural into construction land is not paid as provided in the Law on Planning and Construction (See more: *Law on Planning and Construction,* OGRS, art. 88, par. 8, no. 72/2009, 81/2009 - corr., 64/2010 - decision US, 24/2011, 121/2012, 42/2013 - decision US, 50/2013 - decision US, 98/2013 - decision US, 132/2014 and 145/2014).

Repurposing of forestland into construction land is foreseen by the Law on Planning and Construction and the Law on Forests (*Law on Forests,* OGRS, no. 30/2010) whereas the change is done solely on the basis of a planning document that predicts repurposing forest to construction land. From the date of putting in effect of this planning document, the landowner is entitled to all the rights of the owner of the construction land and in accordance with the Law on planning and construction, i.e. with Article 89 of the said Act. It is necessary to state that the owner of the cadastral parcel which has been changed from forest to construction land is obliged to pay compensation for the change prior to the issuance of a building permit and in accordance with the law governing the maintenance of forestry.

Construction land

Construction land is land that can be developed or undeveloped, i.e. if we talk about developed land it refers to land on which facilities intended for permanent and regular use are built, but

if we speak of undeveloped land we understand it as land without constructed buildings, or if they are constructed they certainly are without a building permit or have a temporary status. Developed construction land is the one equipped for construction and usage, with public utilities whereas the underdeveloped land is to its contrary. Construction land that is not regulated in terms of planning and construction Law and is located in the coverage of the planning document on the basis of which location conditions may be issued, it can be equipped with means of both individual and legal bodies. The very concept of construction land includes the preparation and equipping, as Article 93 states.

"Preparation of land includes exploratory works, development of geodetic, geological and other bases, preparation of planning and technical documentation, programs for land development, resettlement, removal of buildings, terrain reclamation and other works.

In addition to the works referred in the paragraph 2 of this Article, in areas which were exposed to war operations, check up of the existence of residual explosive devices, in accordance with the law shall be performed.

Land equipping includes the construction of utility infrastructure and construction and renovation of public purpose.

"Law on Planning and Construction explicitly states and foresees sources of financing for development of construction land by Article 95:

Finances for regulating construction land is provided from funds raised from:

1) Taxes on Land development;

2) Lease on construction land;

3) Alienation or exchange of construction land;

4) Conversion of lease rights into property rights, in accordance with this Law;

5) Other sources in accordance with the law."

(*Law on Planning and Construction,* OGRS, art. 95, no. 72/2009, 81/2009 - corr., 64/2010 – decision US, 24/2011, 121/2012, 42/2013 - decision US, 50/2013 - decision US, 98/2013 - decision US, 132/2014 and 145/2014).

The taxes for land development are paid by the investor.

Alienation of construction land in public ownership is implemented through public auction under market conditions. Alienation of construction land is followed by the exchange of properties whereas the conditions, manner and procedure of exchange are established by the Government of the Republic of Serbia.

Construction land in public ownership cannot be alienated or leased if not rendered or is not foreseen through a planning document based on which building permits will be issued. Owner of construction land in public ownership specify in detail all the conditions of the procedure and the content of the contract for lease or alienation of construction land. Law on Public Property (*Law on Public Property,* OGRS, no. 72/2011, 88/2013 and 105/2014)

and its provisions relating to the acquisition of property in public ownership and provisions related to acquisition of property in public ownership. It is necessary to specify that the Law on Planning and Construction (See more: *Law on Planning and Construction,* OGRS, art. 100, no. 72/2009, 81/2009 - corr., 64/2010 - decision US, 24/2011, 121/2012, 42/2013 - decision US, 50/2013 - decision US, 98/2013 – decision US, 132/2014 and 145/2014) provides that the land in public property may be alienated or leased by direct negotiation and itemizes with all of the cases in which this can be achieved. When it comes to concessions construction land can be leased even without compensation for the time period as provided by the concession contract.

Land for regular usage of facilities is the land around the facility itself that meets the conditions for forming of building lots in accordance with the Law on Planning and Construction, and which after the procedure becomes a cadastral parcel. If in the process of determining the land for the regular use of the facility it is assured that the area of the cadastral parcel represents land for regular use, the owner of the existing facility, located on the cadastral parcel acquires the right of ownership by direct negotiations at the market price. If the land is less than the cadastral parcel on which the building is built and in case that it is impossible to form a separate building parcel, the owner of the land may alienate the remaining part by direct negotiation at market price. "It is essential that the level, standards and procedures in managing and exploiting the land adjust to the financial situation, capabilities, institutions etc. within reasonable balance between cost and benefit" (Aleksic, Marošan, 2002).

Converting rights to use into property rights on construction land without compensation

Seeing as how ownership right on cadastral parcel is entered in favour of the person registered as the owner of the building or a facility that is located on that land, consequently the right to use the construction land turns into a property right without fees (See more *Law on Planning and Construction,* OGRS, art. 102, no. 72/2009, 81/2009 - corr., 64/2010 - decision US, 24/2011, 121/2012, 42/2013 - decision US, 50/2013 - decision US, 98/2013 - decision US, 132/2014 and 145/2014)). It is necessary to state that the right to property is acquired on the date that the Law on Planning and Construction is put in effect. This does not apply to holders' right to use the construction land or company, as well as to all those entities on which the provisions of the law relating to privatization, bankruptcy and enforcement proceedings is applied. Article 102 of the aforementioned law provides that the aforementioned - "does not apply to persons who are holders of right to use of underdeveloped land owned by the state, which was previously governed by the applicable laws, until May 13, 2013, or on the basis of a decision of the competent authority and this land is acquired solely for the purpose of construction in accordance with regulations as set forth. "The right to use which changes into ownership right without compensation does not apply to any holders of rights to use on the construction land, whose position, i.e. status is determined by the laws governing the sport as well as associations." The negation of the right of use that is converted into property rights is applicable to companies that are marked as holders of rights to use the

construction land. Law on Planning and Construction in Article 102, paragraph 9, item 5 states that the conversion of usage rights into property rights does not apply to – "persons, holders of rights to use the construction land on which the provisions of the regulations of the Republic of Serbia and bilateral international agreements governing the implementation of Annex G of the Agreement on succession issues (OGFRY - International treaties, no. 6/02)." The aforementioned categories of persons onto which the provisions of the Law on Planning and Construction concerning the conversion of right of usage to the right of ownership on construction land without compensation do not apply, are exclusively regulated by special laws whose legal status and position is regulated.

The Law on Planning and Construction overlooks the definition of "unity of property", which means that upon completion of the conversion of rights to use into the right of ownership of construction land existing cadastral parcel of developed construction land, built with all the objects in it becomes a unique item of property rights and thus establishes the unity of property. The point is that all the existing charges, existing on the land and the associated rights that relate to the land or its specific part, from the time of registration of ownership are transferred to the cadastral parcel, i.e. on the part of the cadastral parcel of the specific part owner. In the event that there is a long-term lease of the land in accordance with the Law on Planning and Construction the above-mentioned cannot be applied. The stated law also deals with different issues and instances of unity of property regulation, in cases where there are multiple objects of different owners built on one cadastral parcel, as well as cases when on one parcel there are several co-owners and only one person being the owner of the building, and similar cases.

Conversion

Law on Planning and Construction with its amendments dated December 2014 has omitted, i.e. did not regulate the conversion for the reason that it does not have adequate analysis of the consequences of the conversion implementation, and thus leaves open the question addressing conversion. Conversion of construction land as unresolved issue presents the stumbling block for investments in Serbia and it is necessary for it to urgently solve this question. It is expected that by March 2015, a special law will be passed on conversion of land that will allow the implementation of adequate regulation and the beginning of a repurposing rights to property rights, which would necessarily entail arranging the real estate cadastre as the most important institution in the construction sector (www.mgsi.gov.rs/cir/aktuelnosti/uskoro-javna-rasprava-o-zakonu-o-konverziji).

Once again, we state that it is necessary to conduct the analysis of the effects of conversion based on which a special law will be passed. Conversion as a decade long question should help resolve the issues of prosperity of the construction industry. With the construction representing a prosperous economic sector it would not be unreasonable to say that there is no single segment of human creativity without this specific part of industry. However, if there is no adequate supporting legislative regulations that prosperity cannot be expected. Amendments to the most recent Law on Planning and Construction dated to 2014 introduce novelties and particularly emphasizes that everyone with the right to use has the right to build. These amendments shall be fully applied in practice through bylaws that will be brought to

force in due time, but certainly what is already being applied in practice is the issuance of building permits for a short period of time, which will greatly speed up investments in the Republic of Serbia. The introduction of electronic building permits is expected by the end of the current year. The fundamental question of the adoption of the new Law on conversion is the analysis of the effects of the conversion of rights of use to rights of ownership on construction land because it has to consider all the effects conversion would have on the government, or what would be the result of conversion being conducted free of charge or for a fee. The next question is how high would the compensation be would be if the conversion would be implemented with the payment, and we believe that if the conversion would be conducted for a fee, this fee was would have to be minimal. Innovations that should resonate in practice and improve the construction sector are certainly related to issues of simplification procedures for obtaining building permits, and shortening the period of obtaining the license to less than a month with a "one-window" system through full implementation of the above, which is expected by mid-2015. Positive changes are related to the significant reduction in the category of debtors obliged to pay a fee for the conversion of land with the possibility of obtaining a building permit prior to completion of the conversion process.

Construction in recent years was hampered by enormous administrative and bureaucratic procedures whereas the applicable law allows a more efficient system and method to overcome this problem by applying bylaws that are expected. Applicable Amendments to the said law will improve business conditions for domestic and foreign investors. With the analysis of the effects of conversion and adoption of a special law that will regulate the issue of right to use to the right of ownership of construction land, which are in the process of privatization and have acquired the right to use land and acquire the right to build. Disposal of solutions to conversion issues will not further accelerate the issuance of building permits but will be an indicator to potential investors that the government is unable to solve this problem. As the law on the conversion of land should be adopted by the end of March 2015, it is expected that by the end of the year electronic building permit shall be available. The rapid resolution of this problem will be a confirmation to investors that the legal sector in Serbia is expeditious, which would make investing in the real estate market in the construction sector a safer activity.

Conclusion

"Construction as a complex branch of economy requires that relations of all of its participants are regulated through numerous laws and bylaws. Mutual rights and obligations of all stakeholders in works on investment and construction projects are regulated by regulating their relations *inter partes* on one hand and on the other huge liability towards third parties" (Drašković, 2012).

Repurposing of agricultural into construction land as the current issue needs to be seen through the necessity of applying positive legal regulations which would certainly adequately regulate this issue. Having in mind that the unresolved issue of transferring rights of usage to rights of ownership of construction land hinders investment in the Republic of Serbia, we hope that this will be the reason for the urgent adoption of a new law on conversion that would stimulate an increase in investment in the construction sector.

References

1. Aleksić, I. R., Marošan, S. (2002): *Komasacija zemljišta u zemljama centralne i istočne Evrope i zajednice nezavisnih država,* Geodetska služba, vol. 31, no. 2, pp. 5-8.

2. Annex G of the Agreement on succession issues (OGFRY - International treaties, no. 6/02).

3. Union of Concerned Scientists (2014): *Toward Healthy Food and Farms*, portal of Union of Concerned Scientists, Washington DC, USA, segment Food & Agriculture, available at: www.ucsusa.org/food_and_agriculture/

4. Avramović, M. (2004): *Uređenje zemljišne teritorije komasacijom u Republici Srbiji,* Geodetska služba, vol. 33, no. 1, pp. 54-68.

5. Drašković, B. (2012): *Viša sila u građevinarstvu kao izuzetni događaj ili okolnost*, Zbornik radova, VIII međunarodni naučno-stručni skup Savremena teorija I praksa u građevinarstvu, april 2012, Banja Luka, pp. 447-452.

6. Karolić, R. (2012): *Veličina poseda i produktivnost: Poljoprivreda u Srbiji i Evropi*, portal Balkan magazine, 21.septembar 2012, available at: www.balkanmagazin.net/nauka/cid144-47315/velicina-poseda-i-produktivnost-poljoprivreda-u-srbiji-i-evropi

7. Lilić, S. (2010): *Ekološko pravo*, Pravni fakultet Univerziteta u Beogradu, Beograd, p. 227.

8. Marošan, S., Šoškić, M. (2006): *Aktivnosti na unapređenju procesa komasacije u Srbiji,* Geodetska služba, vol. 35, no. 105, pp. 21-24.

9. Ministarstvo građevinarstva, saobraćaja i infrastructure, Beograd, Srbija, available at: www.mgsi.gov.rs/cir/aktuelnosti/uskoro-javna-rasprava-o-zakonu-o-konverziji

10. *The Draft Strategy for Agriculture and Rural Development of Serbia 2014-2024. November 2013,* Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia, Official Gazette of Republic of Serbia (OGRS), no. 85/2014.

11. *National Rural Development Program 2011-2013 of the Republic of Serbia*, Official Gazette of Republic of Serbia, no. 15/2011.

12. Nikolić Đorđić, E., Mutavdžić, B. (2014): *Koncentracija distribucije poljoprivrednih gazdinstava regiona Srbije prema veličini korišćenog poljoprivrednog zemljišta*, Zbornik radova - Primena podataka Popisa poljoprivrede u analizi stanja poljoprivrede i u planiranju agrarne politike u Republici Srbiji, Maj 2014, Subotica, SORS Beograd, p. 176.

13. Paraušić, V., Cvijanović, D. (2014): *Ekonomska veličina poljoprivrednih gazdinstava u Srbiji i preporuka mera za njihovo osnaživanje*, Zbornik radova - Primena podataka Popisa poljoprivrede u analizi stanja poljoprivrede i u planiranju agrarne politike u Republici Srbiji, Maj 2014, Subotica, SORS Beograd, pp. 25-42.

14. Stojkov, B. (2007): *Ka recikliranju građevinskog zemljišta u Srbiji,* Glasnik Srpskog geografskog društva, vol. 87, no. 2, pp. 175-186.

15. Tica, N., Milić, D., Zekić, V. (2009): *Prinosna vrednost građevinskih objekata u poljoprivredi,* Agroekonomika, no. 41-42, pp. 133-139.

Legislation

16. *Agricultural Land Law,* Official Gazette of Republic of Serbia (OGRS), no. 62/2006, 65/2008, - other laws and 41/2009.

17. *Law on Agricultural and Rural Development,* Official Gazette of Republic of Serbia (OGRS), no. 41/2009 and 10/2013.

18. *Law on Forests,* Official Gazette of Republic of Serbia (OGRS), no. 30/2010.

19. *Law on Public Property,* Official Gazette of Republic of Serbia (OGRS), no. 72/2011, 88/2013 and 105/2014.

20. *Law on Planning and Construction,* Official Gazette of Republic of Serbia (OGRS), no. 72/2009, 81/2009 - corr., 64/2010 - decision US, 24/2011, 121/2012, 42/2013 - decision US, 50/2013 - decision US, 98/2013 – decision US, 132/2014 and 145/2014.

PROMENA NAMENE POLJOPRIVREDNOG ZEMLJIŠTA U GRAĐEVINSKO - PRAKSA I TENDENCIJE

Milan Počuča[3], Bojana Drašković[4]

Rezime

Očuvanje poljoprivrednog zemljišta kao imperativ prosperiteta poljoprivrede Republike Srbije nužno je posmatrati i kroz uzročno-posledična pitanja kao što su promena namene poljoprivrednog zemljišta u građevinsko zemljište koju nužno prati i konverzija kao decenijski problem. Nedovoljno rešena aktuelna pitanja navedenog u legislativnim okvirima otvaraju mogućnosti neadekvatnog korišćenja i eksploatisanja poljoprivrednog zemljišta. Neophodno je putem pozitivno-pravnih propisa regulisati pitanje konverzije građevinskog zemljišta, tj. prava korišćenja u pravo svojine na građevinskom zemljištu i time otvoriti put investicijama u Republici Srbiji. Uz analizu efekata konverzije i uz donošenje posebnog zakona o tom aktuelnom pitanju sama građevinska delatnost bi dodatno prosperirala. Cilj ovog rada je sagledavanje na adekvatan način aktuelne problematike konzumacije, očuvanja i vršenja prenamene poljoprivrednog zemljišta u građevinsko, uz prikaz činjeničnog stanja, prakse i tendecija.

Ključne reči: *poljoprivredno zemljište, građevinsko zemljište, prenamena, konverzija, urbanizacija.*

3   Prof. dr Počuča Milan, vanredni profesor, Univerzitet Privredna akademija, Pravni fakultet za privredu i pravosuđe Novi Sad, Geri Karolja 1, 21000 Novi Sad, Srbija, Telefon: +381 21 400 499, E-mail: pocucabmilan@gmail.com

4   Doc. dr Drašković Bojana, Univerzitet Union Nikola Tesla, Fakultet za graditeljski menadžment, Cara Dušana 62-64, 11000 Beograd, Srbija, Telefon: +381 11 2180 287, E-mail: bdraskovic@krstarica.com

AGRICULTURAL SUBSIDIES IN THE BUDGET OF THE REPUBLIC OF SERBIA[1]

Vesna Popović[2], Biljana Grujić[3]

Summary

In this paper, the authors analyse the dynamics of agricultural subsidies, compared to the developments in public revenue and public expenditure and the total subsidies of the republic budget, in the years of 2006-2013. We performed desk research using official statistical data and processing them with standard statistical methods, and studying and quoting a number of scientific papers and documents of national and EU institutions. We also considered the government's projection of the scope and structure of agricultural subsidies by 2024, having in mind the fiscal consolidations and the obligations of adjusting legislation, support policy and institutional framework in agriculture with those of the EU. A three-year fiscal consolidation programme, which includes, among other things, reducing and re-examining agricultural support programmes, should create a healthy basis for stable and growing budget transfers to agriculture. Investment support will still be very important, and producers could expect a more significant growth in direct payments just before and just after joining the EU.

Key words: *budget, subsidies, fiscal consolidation, agricultural policy, EU accession.*

JEL: *E62, H50, Q14*

Introduction

Agriculture is the base of economic activities. It includes a large number of employees and it creates a significant foreign trade surplus. In the year of 2011, agriculture and food industry accounted for 15.8% of GVA of the national economy (agriculture 10.3%), (SORS, 2013a). The sectors of agriculture, forestry and fishery employ 21.6% of all employed workforce (SORS, 2014a). The export of agricultural and food products in the year of 2013 accounted

---

2   Vesna Popović, Ph.D., Principal Research Fellow, Institute of Agricultural Economics, Volgina Street no. 15, 11060 Belgrade, Serbia, Phone: +381 11 69 72 854, E-mail: vesna_p@iep.bg.ac.rs

3   Biljana Grujić, M.A., Research Assistant, Institute of Agricultural Economics, Volgina Street no. 15, 11060 Belgrade, Serbia, Phone: +381 11 69 72 842, E-mail: biljana_g@iep.bg.ac.rs

for 19.2% of total export, while the import was 7.9% of total import (SORS, 2014b). In the Jan-Nov 2014 period, the participation of agriculture and food industry in total export was 20.3%, and the surplus was 1.3 billion USD, which is a 23% increase compared to the same period of the year of 2013 (SORS, 2014c).

According to 2012 Agricultural Census, 0.3% of agricultural holdings are larger than 100 ha, and use 23.6% of total utilized agricultural area (UAA); 2.8% of holdings have 20-100 ha and use 20.5% of UAA, while 48.1% of holdings have 2-20 ha and use 48% of UAA (SORS, 2013b). The production and export results of the sector as a whole depend on the financial and professional ability of this, most numerous, group of holdings to adopt new, positive, trends in production (Popović, Grujić, 2014). The most common source of agricultural investments for a great number of these holdings is the budget of the Republic. Although the budgetary transfers for farmers are modest, they have contributed to improvements in production for a number of holdings. Many small agricultural holdings with a natural person status[4] can barely make ends meet, and how they will start production in the upcoming period is questionable. All of this is a great risk for a country with difficulties in resisting negative development trends (Grujić, Rajnović, 2012).

It is necessary to increase investments in agricultural production and to direct far more budget transfers to agricultural sector, since strengthening agriculture, in correlation with food industry, is one of the best chances for development of Serbia in the period when food prices in the world tend to jump (Puškarić et al., 2012). This demand should, however, be adjusted to the measures of fiscal consolidation which are prioritised in periods of budget shortages and high public debt. In the framework of fiscal consolidation measures[5], the Government planned reductions in subsidies from the republic budget as well as re-examining certain subsidies programmes, including agriculture, in order to increase the efficiency in public expenditure and preserve the sources of potential growth. In agriculture, these measures are oriented towards investments in productivity and competitiveness growth and infrastructure improvement.

It is very important that the Ministry of agriculture establish cooperation with relevant institutions on both the horizontal and the vertical level, when adjusting the national agricultural policy to the EU Common Agricultural Policy (CAP). Legislation harmonisation is also very important, especially in the field of food safety and quality.

This paper analysed: (1) *fiscal policy and subsidies in agriculture* compared to public revenues and expenditures and total subsidies from the budget of the Republic, 2006-2013; and (2) *amounts and structure of agricultural support*, defined by the Strategy for Agricultural and Rural Development by the year 2024 *in light of legislative, political and institutional framework* of support for agriculture and rural development harmonisation with those of the EU, as well as fiscal limitations in the upcoming three-year period.

---

4   Nearly half of agricultural holdings are smaller than 2ha and use 8% of UAA (SORS, 2013b).

5   Fiscal Strategy for 2014, with projections for 2015 and 2016, OGRS , no. 97/13.

Methodology and data sources

We performed desk research using official statistical data of the Statistical Office of the Republic of Serbia (SORS), Ministry of Finance and National Bank of Serbia (NBS) and appropriate statistical methodology to calculate needful indicators (nominal and real growth indices) for monitoring trends of budget transfers in the reporting period. We also studied and quoted a number of scientific papers and consulted legislation acts, published in the Official Gazette of the Republic of Serbia (OG RS), and relevant documents of national and EU institutions in the fields of fiscal and agricultural policies.

The fiscal policy of the Republic of Serbia in the period of 2006-2013

The period of 2006-2013 in the economy of Serbia was marked by an expansive fiscal policy and failed attempts at restraining its negative effects, which can be seen in a growing budget[6] deficit and increased public debt of the country. The global financial crisis of 2008 found Serbia with a consolidated budget deficit of 2.6% of GDP, which was the result of a politically motivated expansive fiscal policy in the election campaign period, years 2006-2008 (Praščević, 2013).

The crisis conditions during the following year of 2009 made it difficult to conduct serious measures of budget restrictions, so the deficit of the consolidated state was increased to 4.2% of the GDP with approval from the IMF. The increased scope of public expenditure was financed by getting onto debt abroad and on the domestic financial market. The taken anti-recession measures have contributed to a modest growth in the GDP in the years of 2010-2011. Parallel activities on limiting the current public expenditure have resulted in a slower growth of the fiscal deficit, which did reach 4.7% of the GDP in 2011. Already in the end of 2011, the situation got worse, and due to the upcoming elections, the Government was not able to reduce public expenditure and enforce structural reforms in the public sector in the scope demanded by the IMF. The consolidated budget deficit in the year of 2012 grows to 6.1% of the GDP and the public debt is at 56.2% of the GDP. The fiscal consolidation measures from October 2012 did not give the expected results. During the year of 2013, the collection of revenues was below the expected rate. The 2013 supplementary budget planned saving on expenditures, mostly in capital expenditures and subsidies. The consolidated fiscal result in the first quarter of 2014 reaches -7.1% of the GDP and then falls to -3.2% in the third quarter of 2014. The public debt in the third quarter of 2014 was 67.5% of the GDP (Table 1).

---

6   Consolidated budget of general government (consolidated state) as a real indicator of the financial position of the government, the revenues, expenditures and debt.

Table 1. Key macroeconomic indicators (period 2006-2014)

Indicators	2006	2007	2008	2009	2010	2011	2012	2013	Q1 2014	Q2 2014	Q3 2014
Real GDP growth[1], %	4,9	5,9	5,4	-3,1	0,6	1,4	-1,0	2,6	0,1	-1,1	-3,7
Consumer prices[2], % (m/m-12)	6,6	11,0	8,6	6,6	10,3	7,0	12,2	2,2	2,3	1,3	2,1
RS budget deficit/surplus, % GDP	-1,7	-1,6	-1,9	-3,1	-3,3	-3,9	-5,4	-4,5	-7,9	-4,8	-2,3
Consolidated fiscal result, % GDP	-1,4	-1,9	-2,6	-4,2	-4,5	-4,7	-6,1	-4,7	-7,1	-4,2	-3,2
RS public debt (external + nternal) %GDP	35,9	29,9	28,3	32,8	41,8	45,4	56,2	59,6	60,6	61,2	67,5

Source: NBS, 2014.

Note: [1]At constant prices of previous year; GDP - ESA 2010; [2]Retail prices until 2006.

The fiscal position of Serbia today is not favourable and it is far from the legally established fiscal rules[7]. The October 2014 supplementary budget predicts a republic budget deficit of 5.7% of GDP for the year of 2014 (MF, 2014).

The structure of public expenditures of the consolidated state budget is poor because of high current expenditures and low public investments[8]. A republic budget deficit of 4.9% GDP is planned for the year of 2015, while the expected deficit of consolidated state is higher and lies at around 6% GDP (Fiscal Council, 2014). The GDP growth rate in 2014 was revised lowest at -2% (-0.5%, 2015), (NBS, 2014). The IMF predicts a recovery in economic activity in the year of 2016 (GDP growth of 1.5% in 2016, and 2% in 2017), (Tanjug, 2014). According to estimations of the Fiscal council, mid-term prognosis of 1.5% growth in 2016, and 2% growth in 2017 is optimistic and not easily feasible (especially in 2016), and the public debt cannot be stabilised before 2018, at a rate of over 80% GDP (Fiscal Council, 2014).

Agricultural subsidies in the republic budget expenditures, (2006-2013)

The largest part of consolidated state budget transfers is directed from the central level of government, primarily from the republic budget[9]. The republic budget also transfers most of the subsidies, including **agricultural subsidies**, whose participation in total subsidies varies from 32% in 2011 to 51.2% in 2008[10] (Table 2).

---

7   The goal year fiscal deficit of 1% GDP, the public debt (excl. restitution payments), not greater than 45% GDP and the share of pensions, and wages in GDP of 10% and 8%, respectively (Budget System Law, OGRS, no. 54/09, 73/10, 101/10, 101/11, 93/12, 62/13, 63/13-cor, 108/13, 142/14).

8   Research, relevant to Serbian economy has shown that in a developing country with a high external debt, open and with a relatively flexible foreign currency course, an increase in current public expenditure has a minimal effect on production growth. On the other hand, an increase in public investments can have a more significant effect (Bajec et al., 2010).

9   In the period of Jan-Aug 2014, 85.9% of general government budget expenditures is directed to beneficiaries from the central government level (39.4% from the budget of RS), (MF, 2014).

10 In the period of Jan-Aug 2014, there was 51 bln RSD of subsidies directed from the budget of RS, mostly for agriculture (41.7%), (MF, 2014).

**Table 2.** Republic of Serbia Budget (period 2006-2013, in bln RSD)

Budget headings	2006	2007	2008	2009	2010	2011	2012	2013	Nom. growth index, 13/06
I TOTAL REVENUES	494,1	579,5	651,3	656,0	712,2	744,8	788,5	812,1	164,4
II TOTAL EXPENDITURES	529,7	617,6	702,1	746,5	812,5	877,3	980,4	985,7	186,1
1.Current expenditures	476,6	538,7	632,0	699,0	755,5	824,1	930,8	952,4	199,8
Expenditure for employees	121,3	152,7	180,4	184,2	190,4	215,1	238,7	250,2	206,3
Purchase of goods and serv.	36,2	46,2	50,8	50,2	60,1	64,7	68,7	65,9	182,0
Interest payment	19,3	14,8	13,9	20,0	30,1	40,3	63,1	89,3	462,7
Subsidies	31,8	36,3	49,4	40,9	49,5	56,3	86,6	74,3	233,6
Agricultural subsidies	**11,2**	**12,8**	**25,3**	**16,7**	**22,9**	**18,0**	**29,5**	**29,9**	**267,0**
Social assist. and insurance	69,8	75,1	77,8	73,8	87,2	86,6	92,4	108,4	155,3
Other current expenditure	7,1	9,2	9,6	8,3	10,3	15,8	18,3	14,7	207,0
Current and capital transfers	191,2	204,4	250,1	321,8	328,0	345,4	363,0	349,6	182,8
2. Capital expenditures	42,4	65,9	53,0	30,6	31,6	28,6	34,5	21,2	50,0
3. Net lending	10,7	13,0	17,1	16,8	25,3	24,6	15,1	12,2	114,0
III SURPLUS/DEFICIT(I-II)	-35,6	-38,2	-50,8	-90,5	-100,2	-132,5	-191,9	-173,7	
Agriculture subs. in total (%)	35,2	35,3	51,2	40,8	46,3	32,0	34,1	40,2	
CPI[1], 2006=100	100,0	113,0	122,7	130,8	144,2	154,3	173,1	176,9	

Source: MF, 2014, pp. 50-51, 61.

Note: [1]SORS, statistical database, available at: http://webrzs.stat.gov.rs/WebSite/public/ ReportView.aspx.

Agricultural subsidies had a faster growth compared to total subsidies just before and during the economic crisis in the years of 2008-2010, and again in 2013, when agricultural subsidies retain the level from 2012, while subsidies in other sectors are reduced (Graph 1).

Graph 1. Agriculture subsidies in the budget of the Republic of Serbia (period 2006-2013), (Real growth indices, 2006 = 100)
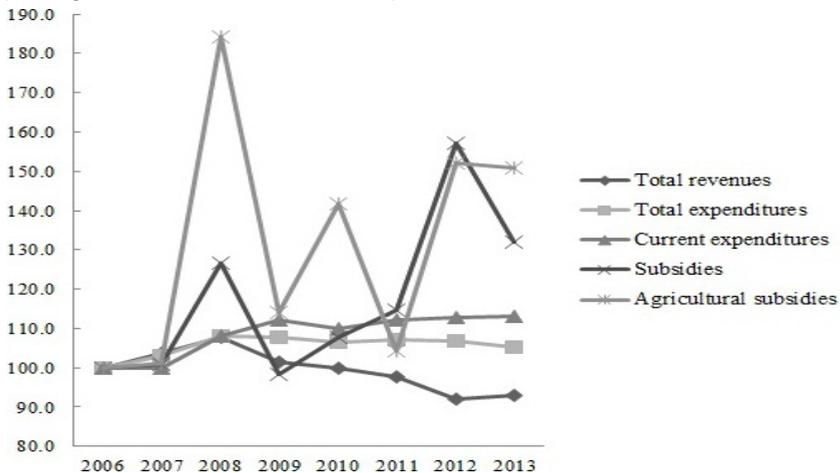
Source: Authors' calculation according to MF, 2014, pp. 50-51, 61.

Note: Consumer price index – CPI, SORS, 2014d.

The fiscal strategy 2014-2016 marks the development of agriculture, along with infrastructure investments, as a priority on the expenditure side of the budget, where the available sources would be directed to, in case of creating additional fiscal space (OGRS, 97/13). Still, agriculture is among the sectors that can expect a reduction in scope and adjustments to the structure of the budget support policy. Adequate adjustments to the structure of measures of support to reduced agricultural budget can neutralise to a large degree the negative consequences of this reduction (Katić, Popović, 2009).

Policy of support for agriculture and rural development in Serbia

There are three basic fields of action on ensuring support for the development of agriculture and rural development during the pre-accession period: 1) *creating a consistent support policy for agriculture, in accordance with the EU Common Agricultural Policy (CAP)*, 2) *strengthening the legislative framework*, and 3) *building institutions, necessary for implementing legislations and support policy*.

For harmonisation with the EU CAP, it is necessary to make important changes in the domestic **agricultural policy**. While the Serbian policy of support in agriculture and rural development is determined at an annual level and financed by modest budget amounts[11], the budget framework of EU CAP is determined for a period of seven years, with planned annual subsidy amounts and a high rate of budget appropriations for agriculture and rural development.

By the EU Multiannual Financial Framework (MFF) for the period 2014-2020 (Council Reg. 1311/2013), the EU CAP receives 362.8 bln EUR (commitment appropriations in prices from 2011, without assigned revenues). Of this amount, 12.7 bln EUR (3.5%) are dedicated to market measures, 265.1 bln EUR (73.1%) for direct payments and 84.9 bln EUR (23.4%) for rural development. Already in 1992, market measures represented over 90% of total CAP expenditure, driven by export refunds and intervention purchases. Compared to 2013, in the year of 2020 Pillar 1 (direct aids and market-related expenditure) would dispose with 12.9% and Pillar 2 (rural development) with 17.7% less in appropriations. Still, this is a strong support to the reformed CAP, with an amount of 37.8% of the MFF 2014-2020 (EP, 2013; EC, 2013).

The budget framework of agricultural support for the period of 2014-2024, as defined by the Strategy for agriculture and rural development of the Republic of Serbia, maintains the development orientation of the Strategy. The agricultural budget is projected in such a way that it can reach more than twice the level of today during the pre-accession period (755 mil EUR after 2020, compared to 280 mil EUR in 2013). This would increase the ability

---

11 By the Law on Incentives in Agriculture and Rural Development (OGRS, no. 10/13, 142/14), the Government will for each budget year determine the agricultural budget and the type and maximal amounts of incentives, in accordance with this Law, and the Budget Law of the RS. The amounts for incentives is determined in the framework of the Ministry of Agriculture budget heading, which in total cannot be smaller than 5% of the budget of the RS for the mentioned year, in the sense of the law that regulates the budget system.

of the sector to use EU funds, and the incentives would reach the level they had in the surrounding countries at EU accession point. The different dynamics of growth in budget appropriations for these purposes in sub-period 2014-2016 acknowledge the demands of the fiscal consolidation (Table 3).

Table 3. Projected agricultural budget of Serbia (period 2014–2024, in mln EUR)

Pillars	2013	Economic crisis sub-period (2014-2016)	Sub-period of the renewed economic growth and access to IPARD (2017-2020)	Sub-period of the new EU program period (after 2020)	Accession
Pillar 1	230	240	370	530	680
Pillar 2	20	30	85	150	750
Special incentives and other	30	35	50	75	110
TOTAL	**280**	**305**	**505**	**755**	**1,540**

Source: The Strategy of Agriculture and Rural Development of the Republic of Serbia 2014–2024, p. 84, (OGRS, no. 85/14).

Having in mind the need for improving the competitiveness of the sector in the pre-accession period, in the conditions of parallel engagement on harmonisation of domestic schemes of support with EU CAP, the budget projection contains:

1) An increase in amount and share of direct payments per ha/head in the structure of direct incentives of the Pillar 1 of agricultural support on account of reducing coupled support (production-related aid), establishing market support and support for small producers;

2) Strengthening the support for rural development (the share of which in the total incentive will grow on account of reductions in direct incentives of the Pillar 1), and within it, support for investments for improving competitiveness and reaching quality standard, environmental and support programmes for LFA areas and rural infrastructure building;

3) Directing support towards general services in agriculture, in order to ensure knowledge transfer and technology and adopting European food safety and quality standards (OG RS, 85/14)[12].

When it comes to reforms of agricultural policy and harmonisation with EU CAP in the conditions of fiscal consolidation (sub-period 2014-2016 of the budget plan), the Ministry of Agriculture already faces the first tasks in re-examining the justification of the current subsidies programmes. It is about: 1) abolition of the EU CAP non-compliant milk subsidy, and 2) redirection of a part of direct payments per ha in plant production

---

12 Strengthening the support for general services in agriculture (research, improvements in food safety and quality and standardisation, extension services, marketing and promotion, infrastructure) as well as programmes connected to regional development and the environment is in accordance with the rules and recommendations of the WTO, where Serbia is waiting for membership since 2005 (Popović, Katić, 2007).

to investment support for promoting competitiveness in production and processing of agricultural products.

The lack of a referent national laboratory for milk disables the payment of premium to producers according to the quality of the raw milk[13]. A small number of dairy cows registered in livestock breeding records are an obstacle to implementing payments per head, which should replace the milk subsidy in the process of harmonisation with the EU legislative as of the year 2016.

The amended Law on Incentives in Agriculture and Rural Development (OG RS, 142/14) limits subsidies per ha in plant production in 2015 to producers with holdings of up to 20ha of sown arable land and plantations, instead of the current 100 ha. Such a decision is justified by the desire to support small commercial producers, and direct the mid-range producers towards more efficient measures of investment support.

This can protect the income of small producers and implement certain necessary savings in the republic budget, but in this case, the support will have more of a social character than a development one. Measures of investment support are more efficient than direct payments in raising the competitiveness of mid-range commercial households in transitioning countries, but in this case it is necessary to ensure the redirection of savings made from direct payments into investment support to this group of producers, which is not probable in the conditions of fiscal consolidation[14]. Investment support will certainly remain a very important measure, and producers can expect a more significant growth in direct payments after accession to the EU (Popović, Katić, 2007).

Strengthening the legislative framework includes harmonising the domestic legislation with that which is applied in the Union. The National programme for the adoption of the EU acquis – NPAA (2014-2018), (The Government of the Republic of Serbia, 2014), determines the dynamics of harmonisation. The Ministry of Agriculture and Environment Protection holds the jurisdiction over harmonising the legislative about: agriculture and rural development, food safety, veterinary and phytosanitary policies and fishery. The Strategy for agriculture and rural development of the Republic of Serbia for the period of 2014-2024 defines the goals, priorities and framework of political and institutional reforms, as well as the dynamics of legislation harmonisation in the mentioned fields.

The adjustment of legislation in the field of food safety and quality has priority, bearing in mind the significance of this matter for placing food on the EU market. A great deal of work here is done by passing the *Law on Food Safety* (OG RS, 41/09) and appropriate subordinate regulations. The Law defines the general conditions for safety of food and

---

13 A budget line for the establishment of a laboratory for testing the quality of raw milk is defined in the 2015 budget of the Republic of Serbia (OG RS, 142/14).

14 The budget of 2015 predicts a permanent reduction in agricultural subsidies in the amount compliant with the subsidy reduction "per ha" to a maximum of 20 ha. The budget for 2015 is the first step in a three-year programme of fiscal consolidation, which has a goal to recover public finances and stabilise the public debt (Fiscal Council, 2014).

animal food, the obligations of the subjects in food and animal food trade, a system of fast intelligence and crisis management and other matters of hygiene and food quality (Grujić, Rajnović, 2012). The quality policy is oriented towards harmonising domestic legislation with EU legislation in the field of protecting the geographic origin of agricultural and food products, where the central place belongs to the *Law on Indications of Geographical Origin* (OG RS, 18/10), with associated regulations. In order to appear on foreign markets successfully, the participants in the value chain must satisfy food safety and quality standards (ISO 22000:2005, HACCP, GLOBALGAP, British Retail Consortium, KOSHER, HALAL and others).

Appropriate **institutional capacities** are a necessary precondition for efficient harmonisation of the legislative framework and the agricultural policy. The Law on Agriculture and Rural Development established the *Directorate for Agrarian Payments* in 2009 (OG RS, 41/09). Directorate performs the activities related to the implementation of the subsidies program in agriculture, manages the Farm Register and implements international assistance to agricultural policy in the Republic of Serbia. The process of accrediting the Directorate for using IPARD funds (the IPARD agency) is underway.

One of the sections of the Directorate for Agrarian Payments has a task of establishing and managing *Integrated Administration and Control System (IACS)*. This system, along with a well-developed *Land Parcel Identification System (LPIS)*[15] enables an efficient transfer of direct payments to the beneficiaries and is a precondition for optimal use of EU funds in agriculture.

The mechanism of market interventions includes buying and selling agricultural products and subsidising storage costs. According to the NPAA (2014), establishing a legislative and institutional framework (organisational units of the Directorate for Agrarian Payments) for *market interventions* is expected towards the end of 2016. According to the same source, establishing a special organisational unit within the Ministry of Agriculture and Environment Protection for dealing with tasks in *state aid in agriculture and rural development* is predicted for the year of 2017.

Progress in structural reforms in agriculture is tightly connected to the development of entrepreneurship in food production and processing, primarily in family households that have been in the focus of agricultural and RD strategists for years. The development of small and medium sized enterprises in agribusiness needs significant investments through different types of credits. Financial support can be obtained through institutional support and share capital of banks, credit associations and leasing companies (Bogavac Cvetković et al., 2010). Domestic agriculture also needs a specialised agricultural bank, whose primary task would be concentrating free (and cheap) financial resources and release them into agriculture under benefit conditions (Vasiljević, Popović, 2014).

Producer organisations and clusters are of great importance to efficient business doing of a great number of small and medium sized agricultural producers (Nikolić, Popović, 2007).

---

15 The first draft of the Strategy for implementation of LPIS/IACS was presented in Sept 2014.

Producer organisations operate efficiently in the EU, especially in production of milk, meat, and fruit and vegetables. In Serbia, these organisations are still few, mostly local and have a weak competitive position on the market. Development of *wholesale markets* as trade channels is especially important for these market subjects, from the aspect of food safety and quality standard control.

Passing the Law on Food Safety created a legal basis for establishing Directorate of National Reference Laboratories, as an administrative body within the Ministry of Agriculture. Directorate encompasses a *network of reference laboratories*, which perform tasks in the field of food safety, plant and animal health, residues, milk quality and plant gene banking, and carries out other activities in this area.

The Ministry of Agriculture and Environment protection is the main stakeholder and coordinator of activities on harmonization of national agricultural policy with EU CAP with relevant institutions on the horizontal and the vertical level (ministries, extension service, rural development support network, chambers of commerce, science and research organisations, etc.), (Grujić et al., 2012).

Conclusion

Serbia faces great problems when it comes to fiscal consolidation and support for the agricultural sector. The reasons for reducing budget expenditure and re-examining the current support programmes (those in the agriculture sector, among others) lie in the fact that the state has significant budget deficit and that it uses a wide spectrum of fiscal policy measures to reduce it.

At the same time, agriculture and food industry are marked as sectors whose comparative advantages will serve as basis for the economic policy of the country in the upcoming period, and sectors where we expect the establishment of a new investment and development cycle.

It is imperative for the state authorities to provide adequate amounts of budget support to finance the development-oriented investments in agriculture and rural areas, and take on the necessary activities in establishing and strengthening institutions that will deal with adjusting legislation and agricultural policy with those of the EU.

Market oriented medium sized households as pillars of the development of agriculture, food industry and food export, as well as of preserving the vitality of the rural areas, must come into focus of budget support. These households primarily need investment support for modernisation and strengthening the production chain in the pre-accession period, in order to promote competitiveness and reaching EU food safety and quality standards.

Reducing direct payments due to budget restrictions will not help the development of the sector unless followed by strengthening investment support, but a fiscal consolidation should create healthy conditions for stable and growing budget transfers for these purposes, at best already in 2018. The producers can expect significantly larger amounts of direct support just before and after EU accession.

Literature

1. Bajec, J., Stamenković, S., Kovačević, M., Vučković, V., Jakopin, E., Bogdanov, N., Zdravković, M., Filipović, S., Mitrović, S., Nikolić, I., Petrović, P., Živković, B., Arandarenko, M., Arsić, M. (2010): *Postkrizni model ekonomskog rasta i razvoja Srbije 2011-2020,* stufija, Ekonomski institute Beograd – MAT, Ekonomski fakultet Beograd – FREN, available at: www.kss.org.rs/doc/1102_makroekonomska_proj__razv_Srbije_2011-2020.pdf.

2. Bogavac Cvetković, N., Ilić B., Milićević, V. (2010): *Globalizacija i konkurentnost agrarnog sektora Srbije,* Ekonomske teme, no. 2, pp. 159-168.

3. European Commission (EC), (2013): *Overview of CAP Reform 2014-2020,* Agricultural Policy Perspectives Brief No. 5*/ December 2013, EC, Bruxelles, Belgium, available at: http://ec.europa.eu/agriculture/policy-perspectives/policy-briefs/05_en.pdf

4. European Parliament (EP), (2013): *European Council Conclusions on the Multiannual Financial Framework 2014-2020 and the CAP,* Note, Brussels: Policy Department B - Structural and Cohesion Policies, European Parliament, Directorate General for Internal Policies, Bruxelles, Belgium, available at: www.europarl.europa.eu/RegData/etudes/note/join/2013/495846/IPOL-AGRI_NT(2013)495846_EN.pdf

5. Fiscal Council of the Republic of Serbia (2014): *Assessment of the bill on the 2015 budget of the Republic of Serbia*. *Executive Summary*. Fiscal Council of the Republic of Serbia, Belgrade, available at: www.fiskalnisavet.rs/doc/eng/executive_summary_assessment_budget_2015.pdf

6. Government of the Republic of Serbia (2014): *National Programme for the adoption of the EU Acquis 2014-2018 (NPAA),* European Integration Office, Belgrade, Serbia, available at: www.seio.gov.rs/upload/documents/nacionalna_dokumenta/npaa/npaa_eng__2014_2018.pdf

7. Grujić, B., Rajnović, Lj. (2012): *Legislation and trade,* In: Cvijanović, D., Bekić, B., Jeločnik, M. (Eds.) - Solutions and interventions for the technological transfer and the innovation of the agro-food sector in South East regions - TECH. FOOD PROJECT, IAE, Belgrade, pp. 62-76.

8. Grujić, B., Roljević, S., Sarić, R. (2012): *EU agricultural policy budget and stabilization of Serbian agrar directions,* Proceedings of Conference Аграрная наука, творчество, рост, Том 1, Stavropol Stata Agrarian University, Stavropol, Russian Federation, pp. 307-311.

9. Katić, B., Popović, V. (2009): *Agrar u ekonomskoj politici Srbije za 2009. godinu*. Ekonomika poljoprivrede, vol. 56, no. 1, pp. 145-155.

10. National Bank of Serbia (NBS), (2014): *Inflation Report,* NBS, Belgrade, November 2014, available at: www.nbs.rs/export/download/pdf_ioi/inflation_report_11_2014.pdf

11. Nikolić, M., Popović,V. (2007): *Associations in beef production*, in: the EAAE 100th Seminar Proceedings - Development of Agriculture and Rural Areas in Central and Eastern Europe, Novi Sad, EAAE, SAAE and RCC, pp. 251-260.

12. *Fiscal Strategy for 2014, with projections for 2015 and 2016,* Official Gazette of the Republic of Serbia (OGRS), no. 97/13.

13. *Law on Budget System,* Official Gazette of the Republic of Serbia (OGRS), no. 54/09, 73/10, 101/10, 101/11, 93/12, 62/13, 63/13-cor, 108/13, 142/14.

14. *Law on Incentives in Agriculture and Rural Development*, Official Gazette of the Republic of Serbia (OGRS), no. 10/13 and 142/14.

15. *The Strategy of Agriculture and Rural Development of the Republic of Serbia 2014–2024,* Official Gazette of the Republic of Serbia (OGRS), no. 85/14.

16. *The Republic of Serbia 2015 Budget Bill,* Official Gazette of the Republic of Serbia (OGRS), no. 142/14.

17. *Law on Indications of Geographical Origin,* Official Gazette of the Republic of Serbia (OGRS), no. 18/10.

18. *Law on Agriculture and Rural Development,* Official Gazette of the Republic of Serbia (OGRS), no. 41/09.

19. *Law on Food Safety,* Official Gazette of the Republic of Serbia (OGRS), no. 41/09.

20. Popović, V., Grujić, B. (2014): *Robna i regionalna struktura izvoza poljoprivrede i prehrambene industrije Srbije,* Agroekonomika*,* vol. 43, no. 63-64, pp. 1-12.

21. Popović, V., Katić, B. (2007): *Doha runda pregovora u STO i interna podrška poljoprivredi Srbije,* Ekonomski anali, vol. 52, no. 172, pp. 93-113.

22. Praščević, A. (2013): *Dometi ekonomske politike u prevazilaženju efekata globalne ekonomske krize na ekonomiju Srbije,* Ekonomski horizonti, vol. 15, no. 1, pp. 17-30.

23. Puškarić, A., Jeločnik, M., Bekić, B. (2012): *Trgovinski bilans Republike Srbije u kontekstu međunarodne razmene hrane i poljoprivrednih proizvoda*, Ekonomika, vol. 58, no. 1, pp. 112-120.

24. Republic of Serbia. Ministry of Finance (MF), (2014): *Bulletin Public Finances,* no. 120, August 2014, MF, Belgrade, available at: www.mfin.gov.rs/UserFiles/File/bilten%20javne%20finansije/bilten-120-eng-web.pdf

25. Statistical Office of the Republic of Serbia (SORS), (2014a): *Labor Force Survey (LFS),* Statistical Release, No. 295 – Year LXIV, 31.10.2014, SORS, Belgrade, available at: http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/55/41/RS10_295_eng-III_kvartal_2014.pdf

26. Statistical Office of the Republic of Serbia (SORS), (2014b): *Statistics of external trade,* Statistical Release, No. 194 - Year LXIV, 16.07.2014., SORS, Belgrade, available at: http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/45/06/st12g072014e.pdf

27. Statistical Office of the Republic of Serbia (SORS), (2014c): *Statistics of external trade,* Statistical Release, No. 361 - Year LXIV, 30.12.2014., SORS, Belgrade, available at: http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/63/99/st12122014e.pdf

28. Statistical Office of the Republic of Serbia (SORS), (2014d): *Consumer price indices by COICOP,* data base, SORS Belgarde, available at: http://webrzs.stat.gov.rs/WebSite/Public/Report View.aspx?rptKey

29. Statistical Office of the Republic of Serbia (SORS), (2013a): *Statistical Yearbook of the Republic of Serbia 2013,* SORS, Belgrade, available at: http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/17/20/G20132010.pdf

30. Statistical Office of the Republic of Serbia (SORS), (2013b): *Census of Agriculture 2012 in the Republic of Serbia – Agriculture in the Republic of Serbia,* Book of census results, SORS, Belgrade, available at: http://popispoljoprivrede.stat.rs/popis/wp-content/themes/popis2012/sadrzajeng.htm

31. Tanjug (2014): *Vučić: Reforme u javnim preduzećima biće teže od očekivanih,* portal, Tanjug Beograd, available at: www.tanjug.rs/videodet.aspx?galID=145361&videoID=836944

32. Vasiljević, Z., Popović, V. (2014): *Ekonomsko-finansijska komponenta razvoja sela i poljoprivrede,* Zbornik radova - Perspektive razvoja sela, Knjiga CXLV, Knjiga 5, SANU, Beograd, Odeljenje hemijskih i bioloških nauka, pp. 163-185.

SUBVENCIJE U POLJOPRIVREDI U BUDŽETU REPUBLIKE SRBIJE

Vesna Popović[16], Biljana Grujić[17]

Rezime

U ovom radu autori analiziraju dinamiku subvencija u poljoprivredi, u odnosu na kretanje javnih prihoda i rashoda i ukupnih subvencija budžeta Republike, 2006-2013. godine. Primenjen je metod istraživanja za stolom, korišćeni su zvanični statistički podaci i standardne statističke metode za njihovu obradu i proučen i citiran određeni broj naučnih radova i dokumenata državnih institucija i institucija EU. Razmatrana je takođe i vladina projekcija obima i strukture subvencija u poljoprivredi do 2024. godine, imajući u vidu mere fiskalne konsolidacije i obaveze usklađivanja propisa, politike podrške i institucionalnog okvira u poljoprivredi sa odgovarajućim u EU. Trogodišnji program fiskalne konsolidacije, koji uključuje, između ostalog i redukovanje i preispitivanje programa agrarne podrške, treba da stvori zdrave osnove za stabilne i rastuće budžetske transfere poljoprivredi. Investiciona podrška će i dalje biti veoma važna, a značajniji rast direktnih plaćanja proizvođači mogu očekivati neposredno pred i po priključenju EU.

Ključne reči: *budžet, subvencije,fiskalna konsolidacija,agrarna politika, priključenje EU.*

16 Dr Vesna Popović, naučni savetnik, Institut za ekonomiku poljoprivrede, Volgina 15, 11060 Beograd, Srbija, Telefon: +381 11 69 72 854, E-mail: vesna_p@iep.bg.ac.rs.

17 Biljana Grujić, MA, istraživač saradnik, Institut za ekonomiku poljoprivrede, Volgina 15, 11060 Beograd, Srbija, Telefon: +381 11 69 72 842, E-mail: biljana_g@iep.bg.ac.rs.

TOURIST SHIPS ON THE DANUBE AS AN OPPORTUNITY FOR EXPORT OF MEAT AND MEAT PRODUCTS[1]

Dragan Tešanović[2], Nikola Vuksanović[3], Bojana Kalenjuk[4], Milijanko Portić[5]

Summary

Tourism development launches growth of other complementary industries. River tourism, as a special selective tourism form, experiences intensive development, with an importance for all the regions through which the Danube, as an integral part of the Rhine - Main – Danube waterway, flows. During cruising, the largest consumption is achieved on the ship itself, where meat and meat products are an integral element of every meal and represent the most expensive component of the dish. The task of this paper is to analyse the consumption of meat and meat products on six tourist ships run by to "Grand Circle Corporation" in 2013, in order to point out the possibility of supplying them with meat and meat products from sources in the territory where the ships sail. The paper presents the current suppliers and manufacturers of meat and meat products in Republic of Serbia that could supply the company „Grand Circle Cruise Line" and other tourist ships that cruise on the Danube. Also, the research indicates that the export of meat products from the Republic Serbia could have a significant effect on improving the agricultural conditions and food production through increased competition, assuming the Serbian manufacturers supply most of tourist ships and not only the six ships analysed in this paper. Research results, specifically, point out the possibility of increasing export of poultry and beef if the potential demand of each

---

2   Dragan Tešanović, Ph.D., Full Professor, University of Novi Sad, Faculty of Science, Department of Geography, Tourism and Hotel Management, 21000 Novi Sad, Republic of Serbia, Trg Dositeja Obradovića 3, Phone: +381 63 541 436, E-mail: tesanovic.dragan@gmail.com

3   Nikola Vuksanović, M.Sc., Teaching Assistant, Higher education school for management and business communication, Department of Hospitality, 21205 Sremski Karlovci, Republic of Serbia, Mitropolita Stratimirovića Street 110, Phone: +381 63 19 68 770; E-mail: vuksanovicnikola@yahoo.com

4   Bojana Kalenjuk, Ph.D., Assistant Professor, University of Novi Sad, Faculty of Science, Department of Geography, Tourism and Hotel Management, 21000 Novi Sad, Republic of Serbia, Trg Dositeja Obradovića Street 3, Phone: +381 64 199 02 35, E-mail: bojanakalenjuk@yahoo.com

5   Milijanko Portić, Ph.D., Associate Professor, University of Novi Sad, Faculty of Science, Department of Geography, Tourism and Hotel Management, 21000 Novi Sad, Republic of Serbia, Trg Dositeja Obradovića Street 3, Phone: +381 63 814 47 39, E-mail: porticprof@yahoo.com

of the eight companies with their 54 ships which operate tourist cruises on the Danube is taken into account. The data have been systematized, analysed and presented statistically in tables and graphs.

Key words: *Danube tourist ships, meat, meat products, export.*

JEL: *L83, O13, Q13, Q11*

Introduction

Thanks to the favourable climate, good natural characteristics of the land and available water resources Serbia has a great potential in the sector of agriculture and food production and thus has the possibility to conquer the market provided that they meet the international quality standards. In addition, tourism has become an important source of income due to, among other things, the Danube (Popović et al., 2012), where a large number of tourist ships sail. These ships could be a new segment on the market and possibility to export agricultural and food products.

The Danube is one of the most frequently visited tourist destinations in Serbia. River tourism has an increasing growth rate in Europe and an even more expansive rate is predicted for the future (Katić et al., 2011), making the Danube, as a traveling route, an important factor of economic development for Serbia (Vitez, Raičević, 2008).

The Danube has the longest flow through Serbia, and yet not a single business entity from Serbia supplies the ships' kitchen with foodstuffs (Tešanović et al., 2010a; Tešanović et al., 2010b; Tešanović et al., 2013), or other goods.

Tourism, agriculture and food industry are interconnected (Hrabovski-Tomić, 2010), and Meler and Cerović (2003) suggest that expenditures in food and drink in tourism account for one-third of the total tourist consumption of global tourism traffic. As a result of the tourists' consumption at a certain destination, tourism impacts the economy (Đenadić, 2010).

The topic of this paper is the consumption of meat and meat products on the tourist ships which pass through the Republic of Serbia because the meat is the basic and the most expensive component of every meal and most used after foods of plant origin (Kalenjuk et al., 2011; Tešanović et al., 2013). In this paper, the meat of warm-blooded animals (beef, veal, lamb and pigs), poultry meat and meat products will be discussed. Meat production in Serbia has a long tradition and some of the greatest successes of Serbian agriculture are linked specifically to the production of meat.

The task of this paper is to analyse the types and quantities of meat and meat products, which are consumed on the riverboats owned by "Grand Circle Cruise Line" which sail through the Republic of Serbia. The aim of the study is to determine which types of meat and meat products that are consumed on tourist ships of the company "Grand Circle Cruise Line" could be supplied by the producers in the Republic of Serbia. This should also indicate the possibility to export the same products that are consumed on tourist ships of the company "Grand Circle Cruise Line" to other companies that operate on the Danube, thus increasing the sales of meat in the Republic of Serbia.

Literature review

The potential of the Danube River

At its lenght of 2,888 km, Danube is the second largest European river. Originating in Germany, the Danube flows through 10 countries in total: Germany, Austria, Slovakia, Hungary, Croatia, Serbia, Bulgaria, Romania, Moldova and Ukraine, and flows into the Black Sea on the territory of Romania (Katić et al., 2011). It is a part of the Trans-European navigation system of Rhine-Main-Danube waterway and connects the Atlantic with the Mediterranean (Mihić et al., 2011), thus giving it the ability to transport cruise ships from all over the world (Katić et al., 2011). The development of tourism on the Danube River and of the Danube region itself represents one of the priority directions of the overall development of Vojvodina.

Trends in nautical tourism

In 2013, the worldwide cruise market was estimated at $36.2 billion, up 4.8% from 2012; cruise passengers carried worldwide in 2013 is predicted to come at 20.9 million, a 3.3% increase over 2012; the top two cruise companies are Carnival Corporation and Royal Caribbean Cruises Ltd. Co. (they account for 71.7% of worldwide share of revenue); total worldwide cruise capacity at the end of 2013 was 438,595 passengers (3% increase over 2012) and 283 ships (Cruise Market Watch, 2012).

In the period of 2008 to 2013, river cruises recorded 10% of annual increase in the number of passengers while the cruise industry as a whole experienced an average growth of about 7% per year. According to the company Cruise Travel Outlet, river cruise lines currently face a problem to keep up with the demand. Namely, the majority of the companies had already booked a year in advance all the available river cruising places for the 2014 cruising season (Market Watch, 2013).

The steady growth of nautical tourism is also evident in Serbia, despite the scarcity of more recent data: year 2002 saw 101 tourist ships in the entire country, with 12,185 passengers, while this number grew more than nine-fold, to 915 ships in 2007 with 117,078 passengers. In addition to the steady growth of ships and passengers, the percentage of foreign tourists among those passengers has also been increasing: starting from 3.9% in 2002 to 16.8% in 2007, with a pique in 2005 with 21.2% (Dragin et al., 2010; Dragin et al., 2014).

According to the research conducted by Dragin et al. (2010; 2014) the cruises on the Danube have a positive impact on Vojvodina Province, primarily the riparian area of the Danube (only Novi Sad - the "Port of Vojvodina for cruisers"). It can be noted in the research that the number of tourists on the Corridor VII (in Vojvodina Region) is increasing every year. Danube river cruise market recorded annual increases, which means economic impact of cruise tourism. Further research is necessary for more specific economic impact.

Production and sale of meat in the world and in domestic markets

Đorović and associates (2009; 2010) point out that an increase in the production of meat is a characteristic of economic development. These authors have studied the meat production globally in the period from 1989 to 2008 using three cross-sections: 1989-1991, 1998-2000 and from 2006 to 2008. The average annual growth rate of meat production was 2.5% in the period of 2006-2008. Compared with the initial period analysed by the authors (1989-1991), the production of meat has increased by 59% and represents about 286 million tons of meat and meat products. Out of the 15 largest meat producing countries (U.S. 18% of world meat production, Brazil 12.1%, China 7.8% and in Europe: Russia 2.7%, France 2.3% and Germany 1.8%) developed countries provide most of the world's production of beef and buffalo meat at 62% , while developing countries have a higher share in world production of pork, poultry, mutton and goat meat.

Meat and meat products are essential in the diet of the people in developed countries (Saba, Di Natale, 1999; Grunert, 2006). Fernandez Gines and associates (2005) state that the meat industry is one of the most important food industries in the world with a continuous increase not only in consumer demand but also in the development of competition, which emphasizes the continuous research of new products.

In the global production of meat, pork is produced the most, with a share of about 41%, followed by poultry, with a share of about 30%. Beef and buffalo meat are in the third place at about 23%, while sheep and goat meat are at around 5% of the share and are in the fourth place (Đorović et al., 2009, 2010). The participation of Serbia in the total world production of meat is extremely modest, at around 0.17%. Wherein, the production of beef and poultry accounts for approximately 0.1%, while the production of pork and mutton for about 0.2% (SORS, 2012).

Đorović and associates (2009; 2010) stated that the meat production in Serbia during the period of their evaluation, from 1989 to 2008, is characterized by permanent decrease and it is at the level of about 500,000 tons. With a negative growth rate of −0.7%, during the second cross-section period the production fell by 6.5% and even more in the third period, as much as 12.6%. The only kind of meat which saw an increase was pork, with a symbolic increase of 0.9% (SORS, 2012). Serbia is the largest producer, consumer and exporter of all kinds of meat in the CEFTA countries.

Table 1 shows the production of fresh meat in the Republic of Serbia from 2009 to 2013. Comparing the annual consumption of tourist ships sailing on the Danube and passing through the Republic of Serbia to the annual production of meat in the Republic of Serbia, it can be noticed that those are significant quantities of meat which could result in increased production and export in meat industry.

Table 1. Meat production in the Republic of Serbia

*thous. tons	Beef	Pork	Mutton	Poultry meat
2009	100*	252	24	80
2010	96	269	23	84
2011	81	271	24	103
2012	82	252	22	94
2013	70	249	30	92

Source: SORS, 2012-2014.

The production of beef, pork and lamb meat in 2010, despite the small number of cattle, totalled 388,000 tons (Petrović et al., 2011) which can unconditionally provide the needs of all tourist ships that pass through Serbia, since the production of beef and pork is less emphasized compared to poultry and meat products.

The status of export and import agricultural and food products in the Republic of Serbia

In the period from 2000 to 2010, the overall export of agricultural and food products from the Republic of Serbia was at the average annual level of 1.14 billion USD, and an analysis indicates that meat and meat products are in the second place according to the Institute for Statistics of the Republic of Serbia (SORS, 2012). In the structure of the total value of exports and imports of fresh meat, exports share is about 52%, and imports is about 31%, while processed meat export has a share of about 48%, and import of about 69% (Đorović et al., 2010).

Đorović and associates (2010) reported that the largest export of fresh, chilled and frozen meat is directed to Macedonia, Italy, Greece, the United Arab Emirates, Bosnia and Herzegovina, Montenegro, Congo, China and Vietnam. At the same time, the import of these products is usually from Austria, Germany, Spain, Netherlands, Belgium, Italy, Hungary, Greece, France and Slovenia.

Trends and consumer lifestyles in relation to the consumption of meat

Previous studies (Saba, Di Natale, 1999; Fernandez-Gines et al., 2005; Grunert, 2006) indicate the need of market research that is focused on consumers, and the analysis of external factors, such as their needs, attitudes, habits and lifestyles. The industry for agro-food products, in order to be competitive on the market, should pay attention to these external factors which influence the selection of products (Saba, Di Natale, 1999; Grunert, 2006). An opportunity for fragmentation and product differentiation of the meat market opens for the producers based on these external factors. The results of the market analysis indicate the frequent occurrence of interactions between consumer, attitudes and lifestyles in relation to the selection of products (Saba, Di Natale, 1999; Grunert, 2006), which later determines the way the manufacturers produce agricultural and food products. Same logic applies to the field of tourism: Permanent monitoring of the needs and demands of consumers or tourists is not only important for the agro-food industry, but also for tourism, in particular for the hospitality and the selection of the most appropriate parts of the meat for preparing and serving.

Research methods

Six ships which sail on the Rhine-Main-Danube Canal, each with a capacity of 140 passengers, constitute the sample used for the purposes of this research. The sample represents 10.4% of the total tourist turnover of cruisers docked in Novi Sad during 2007, which were 54 ships. In 2007, tour operators were mainly from the USA (Massachusetts – Grand Circle Travel and Grand Circle Corporation, California – Viking River Cruises), Germany (Peter Deilmann, Phoenix Reisen Gmbh and Nicko Tours), Denmark (Quality Tours) and France (Croisieurope). Usual capacity of the ships ranged between 48 and 180 tourists.

The internal documentation of company "Grand Circle Corporation" from 2013 was used for the purpose of this research, showing the structure and amount of consumption of fresh meat and meat products by type for each of the 6 ships individually. The method of descriptive statistics was applied for the consumption analysis. The results are presented in tables and graphs. During the research of literature the methods of synthesis and analysis, which are combined according to specific research in this paper, were used.

The annual consumption of meat and meat products in the company "Grand Circle Cruise Line"

Consumption of agricultural and food products is a continuous biological and social process that has a fundamental importance. Considering that the problem of food in the world is always present the proper nutrition means eating foods of plant and animal origin, which contain essential nutrients. The company offers its passenger's properly balanced meals for whose preparation they procure fresh food at certain destinations during navigation (Vlahović, Štrbac 2006; Vlahović, Puškarić, 2006).

The Company does not purchase foodstuffs in Serbia, even though the longest flow of the Danube is in the Republic of Serbia, and therefore the retention of ships is the longest. Purchasing for the leg of the voyage through Serbia is done in Budapest in Hungary. The following table lists the companies that supply ships with products and where they operate.

Table 2. – Supplying Companies

Company	Type of products	Country (Itinerary)
HMS Group www.hmsgroup.com	Fresh dairy, precooked and frozen products	Netherlands - Germany - Austria – Hungary
NORDIS www.nordis.nl	fresh fruit and vegetables	Netherlands – Germany
DRIESSEN www.driessenfood.nl	fresh and frozen meat and fish	Netherlands – Germany
Heinz J. Penz www.penz.at	fresh fruit and vegetables	Germany (south) - Austria – Hungary

Source: Internal documentation of Grand Circle Corporation, 2013.

It can be concluded from the Table 2, that the company supplies their ships with meat and meat products from two companies: HMS Group and DRIESSEN based in the Netherlands, and they transport between Germany, Austria and Hungary.

The following data about the different kinds of meat and meat products used in preparing meals refers to the total annual consumption on the six ships that were analysed for this paper.

Beef, veal and lamb consumption - Based on the insight of the internal documentation, it can be concluded that ships kitchens use 10 parts of the beef from which, according to *Regulations on the meat quality of livestock for slaughter, poultry and game (Official Gazette, Republic of Serbia, no. 34/74, 26/75, 13/78 - other Regulations, 1/81 - other Regulation and 2/85 - other Regulations)*, eight parts are of the first category, one part of the second category (Veal hind shank) and one part of the third category (Veal bones cut). Table 2 presents all of the different kinds of cattle meat which are used. The Beef rump cap (Tafelspitz) stands out with the biggest consumption of 2,325.39 kg.

Table 3. - Beef, veal and lamb consumption

Number	Name of foods that are purchased	Unit of measure	Annual consumption by ships						Total
			Ms River Adagio	Ms River Aria	Ms River Concerto	Ms River Harmony	Ms River Rhapsody	Ms River Melody	
Beef									
1	Beef Entrecote boneless	kg	76.1	48.64	65.78	107.89	171.06	119.83	589.3
2	Beef legs boneless (goulash meat)	kg	346.4	555.06	222.68	227.99	232.31	112.25	1,696.69
3	Beef roast beef (Sirloin) Maredo	kg	19.39	44.82	55.68	11.82	56.91	62	250.62
4	Beef roast beef (Sirloin) Argentinian	kg	470.47	383.83	282.93	126.58	378.63	454.08	2,096.52
5	Beef rump cap (Tafelspitz)	kg	387.46	629.82	289.29	288.51	385.16	345.15	2,325.39
6	Beef eye of round semerrolle boneless	kg	191.49	200.56	180.57	199.5	301.39	225.96	1,299.47
7	Beef tenderloin	kg	349.61	384.36	342.08	257.41	272.28	323.04	1,928.78
8	Beef topside boneless Argentina	kg	78.56	34.81	87.36	29.55	50.84	51.96	333.08
Lamb									
9	Lamb legs boneless	kg	157.89	129.43	107.05	129.36	265.77	143.42	932.92
10	Lamb rack	kg	411.08	431.29	282.88	268.84	310.18	338.99	2,043.26
Veal									
11	Veal bones cut	kg	25	320.7	280.34	161.11	260.96	90.14	1,138.25
12	Veal hinds hank	kg	37.53	45.01	41.52	117.04	101.65	97.58	440.33
Total									15,074.61

Source: Internal documentation of Grand Circle Corporation, 2013.

Pork consumption - Ten parts of the pork meat are used for preparing the meals. Share of the parts of the meat by category *(Regulations on quality of slaughtered pork and categorization of pork meat; Official Gazette Republic of Serbia, no. 2/85, 12/85 and 24/86)* are: three from the first category (Pork tenderloin w/head, Ham pork salted and, Pork loin w/out chain or Pork cutlets), two from the second category (Pork smoked rolled roast and Pork neck boneless), three from the third category (Pork meat goulash, hind shank and spareribs) and one from special category - pork in one piece (Pork suckling pig). Pork loin w/out chain stands out with the biggest consumption of 2,388.1 kg, followed by Pork neck boneless with 2,024.91 kg and Pork suckling pig with 1,225.74 kg. Other parts are also in use, like: Pork smoked rolled roast, Pork cutlets, Pork goulash, Pork hind shank, Pork tenderloin w/head and chain and Ham pork salted, as shown in table 4.

Table 4. - Pork consumption

Number	Name of foods that are purchased	Unit of measure	Annual consumption by ships						Total
			Ms River Adagio	Ms River Aria	Ms River Concerto	Ms River Harmony	Ms River Rhapsody	Ms River Melody	
Pork									
1	Pork smoked rolled roast	kg	130.42	72.24	103.24	183.21	207.66	150.78	847.55
2	Pork loin cutlets	kg	11.2	174.3	219.28	289.97	146.32	71.66	912.73
3	Pork meat goulash	kg	210	270.74	30	145	40	87.5	783.24
4	Pork hinds hank	kg	55.02	42.17	36.81	121.36	109.37	124.47	489.2
5	Pork loin w/out chain	kg	325.07	430.19	404.93	356.33	415.7	455.88	2388.1
6	Pork neck boneless	kg	445.76	252.26	484.22	248.04	383.5	211.13	2,024.91
7	Pork spareribs	kg	180	190.02	130	200	221.17	241.01	1,162.2
8	Pork suckling - whole pig	kg	134.73	187.37	168.5	258.51	247.9	228.73	1,225.74
9	Pork tenderloin w/head & chain	kg	87.39	110.8	116.1	104.07	125.76	109.95	654.07
10	Ham pork salted	kg	213.8	192.3	130.61	119.28	70.6	53.98	780.57
Total									11,268.31

Source: Internal documentation of Grand Circle Corporation, 2013.

Poultry consumption – The analysis of data on the consumption of poultry meat, shown in Table 4, shows that Chicken breast fillet is the most consumed part – 6,830.44 kg, followed by Turkey breast boneless with 1,673.28 kg. There is only one part of game that is used - Duck legs with 4,834.3 kg. Other parts of meat are also used, such as: Chicken legs boneless, Chicken legs bone-in, Chicken liver, Chicken wings, Turkey legs (rollbraten - dark meat), Turkey whole without insides with skin, and also products from chicken - Chicken Cordon Blue and Chicken nuggets.

Table 5. - Poultry consumption

Number	Name of foods that are purchased	Unit of measure	Annual consumption by ships						Total
			Ms River Adagio	Ms River Aria	Ms River Concerto	Ms River Harmony	Ms River Rhapsody	Ms River Melody	
Poultry									
1	Chicken breast fillet	kg	918.84	1,034.2	895.64	1235.1	1,580.0	1,166.7	6,830.44
2	Chicken legs boneless"	kg	122.64	54.4	217.64	137.98	10.2	20.14	563
3	Chicken legs bone-in	kg	590.64	629.42	603.43	552.14	831.88	365.76	3,573.27
4	Chicken liver	kg	80	73.34	109.54	109.06	71.18	111.6	554.72
5	Chicken whole (up to 1 kg)	kg	600.54	560.26	782.7	680.22	782.78	940	4346.5
6	Chicken wings	kg	237.34	195.46	70	245.18	210.96	186.54	1,145.48
7	Duck legs	kg	734	985	790	671	914.3	740	4834.3
8	Turkey breast boneless	kg	293.9	351.74	275.02	261.89	234.31	256.42	1,673.28
9	Turkey legs (rollbraten-dark meat)	kg	195	190.22	132.27	151.54	34.3	142.75	846.08
10	Turkey whole w/out insides w/skin	kg	284.7	196.71	227.53	212.04	314	294.67	1,529.65
Precooked products of chicken meat									
11	Chicken Cordon Blue	kg	200	132	144	139	107	225	947
12	Chicken nuggets	kg	105	62	34	153	78	99	531
Total									27,374.72

Source: Internal documentation of Grand Circle Corporation, 2013.

Meat products consumption - Different kinds of meat products which are used on ships are shown in table 6. Ships purchase and use 19 types of meat products, of which Bacon smoked whole for breakfast stands out with the consumption of 8645.73 kg, followed by Minced mixed meat with 3,688 kg and Ham cooked breakfast with 3,410.51 kg. Other meat products that are also consumed are: Cold cuts salami white, Sausage smoked Rockworst, Sausage Bavarian white, Cold cuts turkey assorted, Cold cuts assorted, Sausage Vienna, Sausage Breakfast (20-25gr) and Beef Hamburger.

Table 6. - Meat products consumption

Number	Name of foods that are purchased	Unit of measure	Annual consumption by ships						Total
			Ms River Adagio	Ms River Aria	Ms River Concerto	Ms River Harmony	Ms River Rhapsody	Ms River Melody	
Bacon									
1	Bacon smoked whole for breakfast	kg	1,591.2	1,980.8	1,431.1	1,089.4	1,234.5	1,318.76	8,645.73
Sausages - Fermented dry sausage									
2	Cold cuts salami white	kg	73.42	93.64	77.98	103.47	104.95	88.13	541.59
Sausages - Fermented semi-dry sausage									

Number	Name of foods that are purchased	Unit of measure	Annual consumption by ships						
			Ms River Adagio	Ms River Aria	Ms River Concerto	Ms River Harmony	Ms River Rhapsody	Ms River Melody	Total
3	Sausage smoked Rockworst	kg	103.56	62.56	85.28	140.7	209.98	197.06	799.14
Boiled sausage - finely minced boiled sausage									
4	Sausage Bavarian white	kg	7	75.6	79.8	92.4	71.4	67.2	420
5	Cold cuts turkey assorted	kg	103.77	257.43	115.93	82.67	50.51	156.14	766.45
6	Cold cuts assorted	kg	128.28	50.26	200.17	204.11	155.47	255.63	993.92
7	Sausage Vienna	kg	84	127	60	110	86	96	563
Boiled sausages - rough chopped boiled sausages									
8	Sausages Bratwurst Thuringer	kg	140	140	152	184	152	216	984
9	Sausage Breakfast (20-25gr)	piece/kg	20,420	24,150	17,270	19,600	17,295	19,380	118,115 or 2,362.3
Boiled sausage with chunks meat									
10	Ham cooked breakfast	kg	674.76	565.13	460.57	485.67	648.9	575.48	3,410.51
Boiled sausage									
11	Pate fine	kg	81.04	43.86	40.8	48.16	45.88	39.02	298.76
12	Pate veal liver	kg	37.17	46	38.55	42.34	55.22	61	280.28
13	Pate veal liver portions (20-25gr)	piece	1140	1356	1300	1423	921	1160	7,300 or 146
14	Sausages blood	kg	23.62	10.8	17.96	36.14	38.3	41.7	168.52
Smoked products									
15	Ham black forest	kg	106.74	91.94	53.58	17.24	38.78	101.43	409.71
16	Cobourger ham	kg	26.96	69.28	65.24	151.8	170.96	38.84	523.08
17	Cold cuts turkey breast smoked	kg	59.98	60.34	30.92	56.62	114.6	74.74	397.2
Products of minced meat									
18	Minced mixed meat	kg	858	665	592	486	552	535	3688
19	Beef Hamburger	kg	90	167	137.2	169.68	169.5	187.36	920.74
Total									26,318.9

Source: Internal documentation of Grand Circle Corporation, 2013.

The data obtained about the total annual consumption of meat and meat products from the chosen sample in the company "Grand Circle Cruise Line" is represented in Graph 1. According to the data described above, it can be concluded that the consumption of poultry meat in the amount of 27 t is the biggest, followed by other meat products in the amount of 26 t.

Graph 1. - Consumption of meat products "Grand Circle Cruise Line" in 2013
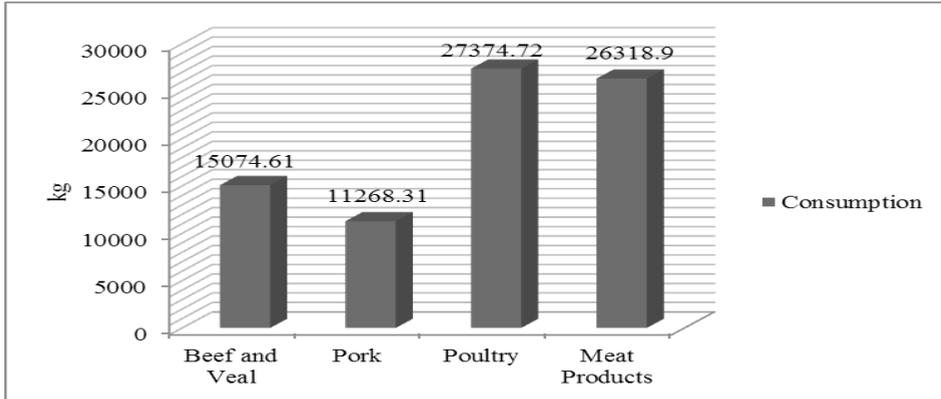
Source: raw data compiling

Meat consumption on the Danube in Serbia

Eight companies with 54 tourist ships sail on the Danube through the Republic of Serbia (Dragin et al., 2014). The ships have a relatively constant number of passengers. The results obtained in the studied sample indicate that the overall consumption of 54 ships would result in roughly 218 thousand tons of poultry and 120 thousand tons of veal and beef annually. The consumption of meat products is approximately 210 thousand tons and pork about 89 thousand tons annually. Since the number of ships sailing on the Danube is expected to increase every year and therefore it can be expected that the amount of meat consumption would increase accordingly.

Meat industries in the Republic of Serbia and their possibilities

Based on the data retrieved from the Government run Agency for company registration (http://www.apr.gov.rs/), the following meat-producing companies are categorized as medium (labeled 3) and large (labeled 4) companies (*Regulations on the content and form of financial statements for companies, cooperatives, other legal entities and entrepreneurs,* Official Gazette of the Republic of Serbia no. 114/06, 5/07 - correction, 119/08, 2/10, 101/12, 118/12 and no. 3/2014): Matijević d.o.o., Agroživ d.o.o. and Carnex a.d. Additionally, in order to provide a reliable cooperation, companies should to have financial liquidity, should be making profits, and hire more than 1000 employees, which all of the above named companies do. Therefore, these categories should be held as a criterion for further inclusion of companies into research and comparisons.

Assortment of fresh beef, veal, lamb and pork could be supplied to ships by: Matijević d.o.o. and Carnex a.d. provided that they meet international sanitary and other quality standards.

With application of international and European regulatory framework in terms of food safety and quality, and by adoption of a holistic and preventive approach to inspection and control in the meat industry (Rantsios, 2007) ships could be supplied with fresh poultry by

the meat industries Agroziv d.o.o. and Matijević d.o.o.

Table 8 represents the possibilities and capacity in meat industries that may identify their interest in this segment.

Table 8. Portfolios of meat industries

Portfolios of meat industries in the market of the Republic of Serbia	
Matijević d.o.o.	- contemporary lines of slaughter cattle capacity of 1,500 units/8 hours; - contemporary line of slaughter poultry capacity of 4500 pieces/hour; - line the deboning which by its capacity monitor the slaughter line; - processing with a line filling of meat finished products up to 120 tons per day.
Agroziv d.o.o.	- slaughter capacity of 24,000 chicken per shift; - line of slitting 4,200 chickens per hour; - automatic packing machines - one hour to pack 300 kg of chicken meat.
Carnex a.d.	- 100 different kinds of product meat; - annual production of 18,000 tons.

Source: www.matijevic.rs; www.agroziv.rs; www.carnex.rs

According to the analysis of the companies in table 8, the company Matijević d.o.o. and Agroziv d.o.o. may identify their interest towards new segments of the market, i.e. export of poultry meat. All the meat industries mentioned above and others on the market of the Republic of Serbia could find their benefits and recognize their interests.

Conclusion

The number of ships sailing on the Danube is increased every year and it is expected that the meat consumption will increase too. At the time when the data was extracted (2013), the sampled company "Grand Circle Cruise Line" did not work with any supplier of meat or meat products from Serbia. Based on an analysis of the market and the meat industry offer in the Republic of Serbia, there are competent and competitive companies which can provide the supply of ships sailing through the country. Producers in the meat industry which met basic reliability criteria are: Matijević d.o.o. Agroživ d.o.o. and Carnex a.d. Meat industries on the market of the Republic of Serbia have met some standards of quality and are in the process of fulfilling all of them. It remains on the State to implement regulations that are in accordance with EU regulations in terms of food production, sanitation and quality and thus eliminate the biggest hurdle in exporting the agro-food products. This would also bring in more revenues in form of taxes for the State. However, until all of the regulations are in place, it is unlikely the cruisers will employ Serbian meat-producers. Each passing cruising season without the regulations in place costs the Republic of Serbia significant amount of money in a wasted potential. Once all of the regulation is in place, and Serbian meat-producers can make use of their producing potential, they will have to put together a carefully drafted and competitive pricing list in order to encourage potential buyers. The future researches should include repeated studies in different companies and compare the results. Additionally, the possibility to export other foodstuffs should be researched.

Literature

1. Cruise Market Watch (2012): *Cruise Market Watch Announces 2013 Cruise Trends Forecast*, portal Cruise Market Watch (posted 26th Nov 2012), available at: www. cruisemarketwatch.com/articles/cruise-market-watch-announces-2013-cruise-trends-forecast, retrieved 15.01.2014.

2. Dragin, S. A., Đurđev, S. B., Armenski, T., Jovanović, T., Pavić, D., Ivkov Džigurski, A., Kosić, K., Favro, S. (2014): *Analysis of the labour force composition on cruisers: The Danube through Central and Southeast Europe,* Journal of Transport Geography, no. 39, pp. 62–72, Elsevier Ltd., available at: www.academia.edu/7795157

3. Dragin, A. S., Jovičić, D., Bošković, D. (2010): *Economic impact of cruise tourism along the Pan-European Corridor VII,* Economic Research, vol. 23, no. 4, pp. 127–141, University of Pula, Department of Economics and Tourism Dr. Mijo Mirkovic, Pula, Croatia.

4. Đenadić, M. (2010): *Healthy food as a factor of Serbian tourism competitiveness,* Economics of Agriculture*,* vol. 57, no. 4, pp. 681-690, IAE Belgrade, Serbia.

5. Đorović, M., Stevanović, S., Lazić, V. (2009): *Globalno tržište mesa,* Ekonomika poljoprivrede, vol. 56, no. 3, pp. 343-358, IAE, Belgrade, Serbia.

6. Đorović, M., Stevanović, S., Lazić, V. (2010): *Srbija na međunarodnom tržištu mesa*, Ekonomika poljoprivrede*,* vol. 57, no. 1, pp. 91-110, IAE, Belgrade, Serbia.

7. Fernandez Gines, J.M., Fernandez Lopez, J., Sayas Barbera, E., Perez Alvarez, J.A. (2005): *Meat Products as Functional Foods: A Review*, Journal of Food Science, vol. 70, no. 2, pp. 37-43, Institute of food technologists, available at: www.ift.org/

8. Grunert, G. K. (2006): *Future trends and consumer lifestyles with regard to meat consumption,* Meat Science, vol. 74, pp. 149-160, Elsevier, Philadelphia, USA.

9. Hrabovski Tomić, E. (2010): *Agri business and food processing industry in the function of tourism industry's development,* Economics of Agriculture, vol. 57, no. 3, pp. 487-497, IAE Belgrade, Serbia.

10. Internal documentation of Grand Circle Corporation (2013), Boston, Massachusetts, USA.

11. Kalenjuk, B., Tešanović, D., Škrinjar, M., Vuksanović, N. (2011): *Food potentials of Vojvodina and tourism development*, Researches review of the Department of Geography, Tourism and Hotel Management, Faculty of Sciences, vol. 40, pp. 180 – 187, Department of Geography, Tourism and Hotel Management, Novi Sad, Serbia.

12. Katić, A., Muhi, B., Stanković, J., Kovačević, J. (2011): *Nautički turizam kao faktor konkurentnosti turizma Vojvodine*, Industrija, vol. 39, no. 2, pp. 237-261, Ekonomski institut, Beograd, Srbija.

13. Market Watch (2013): *What's behind the river-cruise boom,* portal Market Watch (posted 1ˢᵗ Feb 2013), available at: www.marketwatch.com/story/whats-behind-the-river-cruise-boom-2013-02-01, retrieved 15.01.2014.

14. Meler, M., Cerović, Z. (2003): *Food marketing in the function of tourist product development,* British Food Journal, vol. 105, no. 3, pp. 175-92, Emerald Group Publishing Limited, Bingley BD16 1WA, United Kingdom.

15. Mihić, S., Golusin, M., Mihajlović, M. (2011): *Policy and promotion of sustainable inland waterway transport in Europe – Danube River Review Article,* Renewable and Sustainable Energy Reviews, vol. 15, no. 4, May 2011, pp. 1801-1809, Elsevier Ltd, available at: http://www.sciencedirect.com/science/article/pii/S1364032110004028

16. Petrović, M. M., Petrović, M. P, Petrović, M., Aleksić, S., Ostojić Andrić, D., Pantelić, V., Novaković, Ž. (2011): *Kako u Srbiji povećati proizvodnju junećeg, jagnjećeg i svinjskog mesa namenjenog domaćim potrebama i izvozu*, Biotechnology in Animal Husbandry, vol. 27, no. 3, pp. 293-303, Institut za stočarstvo, Belgrade, Serbia.

17. Popović, V., Sarić, R., Jovanović, M. (2012): *Sustainability of agriculture in Danube basin area,* Economics of Agriculture, vol. 59, no. 1, pp. 73-87, IEA, Belgrade.

18. Rantsios, A. T. (2007): *Novi pristupi u inspekciji i kontroli bezbednosti i kvaliteta proizvoda od mesa*, Tehnologija mesa, vol. 48, no. 1-2, pp. 29-35, Institut za higijenu i tehnologiju mesa, Beograd, Srbija.

19. *Regulations on the meat quality of livestock for slaughter, poultry and game*, Official Gazette of the Republic of Serbia, no. 34/74, 26/75, 13/78 - other Regulations, 1/81 - other Regulation and 2/85 - other Regulations.

20. *Regulations on quality of slaughtered pork and categorization of pork meat,* Official Gazette of the Republic of Serbia, no. 2/85, 12/85 and 24/86.

21. *Regulations on the quality of minced meat, meat preparations and meat products*, Official Gazette of the Republic of Serbia, no. 31/2012 and 43/2013 – other Regulation.

22. *Regulations on the content and form of financial statements for companies, cooperatives, other legal entities and entrepreneurs,* Official Gazette of the Republic of Serbia no. 114/06, 5/07 - correction, 119/08, 2/10, 101/12, 118/12 and no. 3/2014.

23. Saba, A., Di Natale, R. (1999): *A study on the mediating role of intention in the impact of habit and attitude on meat consumption,* Food Quality and Preference, vol. 10, pp. 69-77, Elsevier, Philadelphia, USA.

24. Statistical office of Republic of Serbia (SORS), (2012): *Statistički godišnjak Republike Srbije za 2012 godinu*, SORS Belgrade, Serbia, available at: http://pod2.stat.gov.rs/ObjavljenePublikacije/G2012/pdf/G20122007.pdf

25. Statistical office of Republic of Serbia (SORS), (2014): *Statistički godišnjak Republike Srbije za 2014 godinu*, SORS Belgrade, Serbia, available at: http://webrzs.stat.gov.rs/WebSite/repository/documents/00/01/53/32/09-Poljoprivreda.pdf

26. Tešanović, D., Kalenjuk, B., Vuksanović, N. (2010a): *Svečani obroci-značajan segment turističkog proizvoda na rečnim brodovima*, Turističko poslovanje, no. 5, pp. 251-262, Visoka turistička škola strukovnih studija, Beograd, Srbija.

27. Tešanović, D., Kalenjuk, B., Vuksanović, N. (2010b): *Menadžment i struktura gastronomske ponude na turističkim rečnim brodovima*, Četvrti biletarni međunarodni kongres, Hotelplan 2009 - hotelijerstvo i turizam, Hotellink 13-14, pp. 749-758, Visoka hotelijerska škola, Beograd, Srbija.

28. Tešanović, D., Vuksanović, N., Kalenjuk, B., Vukić, M., Gagić, S. (2013): *Danube tourist ship as an opportunity for export of agricultural and food products,* Economics of Agriculture, vol. 60, no. 1, pp. 179-194, IAE, Belgrade, Serbia.

29. Vitez, M., Raičević, V. (2008): *Saobraćaj unutrašnjim vodenim putevima - potencijal za razvoj Srbije*, Pravo - teorija i praksa, vol. 25, no. 3-4, pp. 10-19, Univerzitet Privredna akademija, Novi Sad, Srbija.

30. Vlahović, B., Štrbac, M. (2006): *Obeležja potrošnje pilećeg mesa u evropskim zemljama,* Letopis naučnih radova, vol. 30, no. 1, pp. 175-183, Poljoprivredni fakultet, Novi Sad, Srbija.

31. Vlahović, B., Puškarić, A. (2006): *Uporedna analiza potrošnje mesa u balkanskim zemljama*, Savremena poljoprivreda, vol. 55, no. 1-2, pp. 21-27, Dnevik-Poljoprivrednik AD, Novi Sad, Srbija.

Web sites:

32. http://www.apr.gov.rs/

33. http://www.agroziv.rs/

34. http://www.carnex.co.rs/

35. http://www.matijevic.rs/

TURISTIČKI BRODOVI DUNAVA KAO ŠANSA ZA IZVOZ PROIZVODA OD MESA[6]

Dragan Tešanović[7], Nikola Vuksanović[8], Bojana Kalenjuk[9], Milijanko Portić[10]

Rezime

Razvoj turizma pokreće rast drugih komplementarnih delatnosti. Nautički turizam, kao poseban selektivni oblik turizma, doživljava intenzivni razvoj, sa značajem za regije kroz koje, Dunav kao sastavni deo sistema Rajna – Majna – Dunav, protiče. Tokom krstarenja najveća potrošnja se ostvaruje na samom brodu, gde meso i proizvodi od mesa kao sastavni element svakog obroka prestavlja najskuplju komponentu hrane. Zadatak rada je da se izvrši analiza potrošnje mesa i proizvoda od mesa na šest turističkih brodova kompanije „Grand Circle Corporation" u 2013. godini, s ciljem da se ukaže na mogućnost snabdevanja mesom i prerađevinama iz proizvodnih izvora sa teritorije kojom brodovi prolaze. U radu će biti prikazani aktuelni snabdevači, kao i proizvođači iz Republike Srbije koji bi mogli snabdevati kompaniju „Grand Circle Cruise Line" i druge turističke brodove na Dunavu. Takođe, istraživanje ukazuje da bi izvoz mesa i proizvoda od mesa za Republiku Srbiju, pod pretpostavkom da snabdeva većinu turističkih brodova, imao značajan efekat u boljem pozicioniranju i povećanju konkurentnosti u sektoru poljoprivredne i prehrambene proizvodnje. Rezultati rada, posebno, ukazuju na mogućnost povećanja izvoza živinskog i govedeg mesa ukoliko bi se iskoristio potencijal tražnje svih osam kompanija koje sa 54 broda obavljaju turistička putovanja na Dunavu. Dobijeni podaci su sistematizovani, statistički obrađeni i tabelarno i grafički prikazani.

Ključne reči: *turistički brodovi Dunava, meso i prerađevine od mesa, izvoz.*

---

7   Dr Dragan Tešanović, redovni profesor, Prirodno-matematički fakultet, Departman za geografiju, turizam i hotelijertsvo, Trg Dositeja Obradovića 3, 21000 Novi Sad, Srbija, Telefon: +381 63 541 436, E-mail: tesanovic.dragan@gmail.com

8   Nikola Vuksanović, M.Sc, asistent, Visoka škola strukovnih studija za menadžment i poslovne komunikacije, Mitropolita Stratimirovića 110, 21205 Sremski Karlovci, Srbija, Telefon: +381 63 19 68 770, E-mail: vuksanovicnikola@yahoo.com;

9   Dr Bojana Kalenjuk, docent, Prirodno-matematički fakultet, Departman za geografiju, turizam i hotelijertsvo, Trg Dositeja Obradovića 3, 21000 Novi Sad, Srbija, Telefon: +381 64 199 02 35, E-mail: bojanakalenjuk@yahoo.com

10 Dr Milijanko Portić, vanredni profesor, Prirodno-matematički fakultet, Departman za geografiju, turizam i hotelijertsvo, Trg Dositeja Obradovića 3, 21000 Novi Sad, Srbija, Telefon: +381 63 814 47 39, E-mail: porticprof@yahoo.com

THE EFFECT OF RURAL DEVELOPMENT POLICY ON DOMESTIC VIOLENCE

Ferhat Ćejvanović[1], Alma Kovačević[2], Zoran Grgić[3], Aleksandar Maksimović[4], Vesna Miletić[5]

Summary

Rural development policy deals with achieving goals for rural areas and a wide range of socio-economic activities are included within it. This work intends to connect rural development policies with the occurrence of domestic violence in rural areas. The area of research is the territory of Tuzla Canton, which is, by definition of OECD (less than 150 habitants/km²), a predominantly rural area. Domestic violence is a wide spread form of violence and a discrimination against women. Domestic violence includes all forms of violence occurring in the family, expanding the possibilities that perpetrators of violence and victims of violence may even be persons who do not live in the family but are related to family members, e.g. former partners, relatives, etc.

Research results show that victims of domestic violence are in 90% of the cases women (wives, mothers, daughters, sisters, etc.) and that domestic violence is constantly increasing each following year. All forms of violence over women come stem from a principal discrimination towards women which results in coerce or use of force. For that reason, violence over women is a manifestation of a fundamentally unequal position of women and men, and it represents a form of discrimination against women. This paper uses data acquired from Federal Office of Statistics of Federation of Bosnia and Herzegovina and statistical data from the Ministry of Internal Affairs of Tuzla Canton. On the basis of the gathered data, we employed the descriptive method, the method of analysis and synthesis, as well as the comparative method

1   Ferhat Ćejvanović, Ph.D., Associate Professor, Government of Brčko District of B&H, an external associate, Faculty of Economics in Tuzla, Address: Univerzitetska Street no. 8, 75000 Tuzla, Bosnia and Herzegovina, Phone: +387 35 320 820, E-mail: ferhat.cejvanovic@gmail.com

2   Alma Kovačević, M.Sc., Ministry of Internal Affairs, Tuzla Canton, Aleja Alije Izetbegovića no. 28, 75000 Tuzla, Bosnia and Herzegovina, Phone: +387 61 283 058, E-mail: alma.kr@bih.net.ba

3   Zoran Grgić, Ph.D., Full professor, Faculty of Agriculture, Svetošimunska cesta no. 25, 10000 Zagreb, Croatia, Phone: +385 1 239 3760, E-mail: zgrgic@agr.hr

4   Aleksandar Maksimović, M.Sc., High School of Computing and Business Communication - eMPIRICA, Bulevar mira no. 8, 76100 Brčko, Bosnia and Herzegovina, Phone: +387 65 908 494, E-mail: a.maksimovic22@gmail.com

5   Vesna Miletić, Ph.D., Assistant professor, Faculty of Business Studies Vršac, Megatrend University, Omladinski trg no. 17, 26300 Vršac, Serbia, Phone: +381 64 234 54 89, E-mail: vmiletic68@gmail.com

of analysis. The hypothesis of this paper was the assumption that "women in rural areas are more frequently victims of domestic violence than women living in urban areas".

Key words: *domestic violence, rural development policy, rural area, victim of violence, criminal act.*

JEL: *Q16, K14, Q19*

Introduction

Violence against women represents a serious social problem and it reflects through the gender-sex discrimination of women (Antić, 2000). One form of the violence against women is domestic violence. Reports of World Health Organization (WHO, 1996) show that domestic violence is widespread and it demands a comprehensive answer from all states. Domestic violence is a complex and widespread phenomenon which requires a coordinated reaction from organs of state in order to ensure victims' safety and effective prosecution and punishment of the perpetrator. Domestic violence is a serious violation of human rights and therefore international standards for protection of human rights impose an obligation on states to ensure victims' protection and help. These mentioned standards are contained in the recommendations number V (2002) of Committee of Ministers of the Council of Europe to the member states about the protection of women from violence (GRC, 2009). As a way of fighting this problem, numerous international documents and conventions that define domestic violence have been adopted, prohibiting it at the same time and demanding from the countries to undertake decisive measures to sanction the perpetrators of these crimes. International conventions, within which the regulation of domestic violence is recognized, are: the European Convention on Human Rights and Fundamental Freedoms, the United Nations Convention on the Rights of the Child, the UN Convention on the Elimination of All Forms of Discrimination against Women (ADEPTA, 2011).

United Nations documents are of great importance to the recognition of domestic violence and violations of human rights according to the international law as well as the form of discrimination against women. The report of the Cantonal Attorney's Office (Tuzla Canton) shows that victims of domestic violence are, in 90% of cases, women. Having that in mind, the target of this research is to determine the level and ratio of violence against women in families in rural and urban area of Tuzla Canton, as well as the educational structure of victims of domestic violence in the area of Tuzla Canton (Kovačević, Ćejvanović, 2013).

Materials and method

The paper used secondary data sources such as data from publications of the Ministry of Interior of the Tuzla County (MIATC, 2013a). Also there have been used data from B&H Agency for Statistics and the Department of Statistics of Federation Bosnia and Herzegovina. Based on the data collected were used scientific methods: desk research, descriptive methods, methods of analysis and synthesis, methods of induction and deduction as well as a comparative analysis method.

The policy of rural development with regard to domestic violence

The policy of rural development deals with the realization of goals for rural areas and covers a wide range of socio-economic activities. What should be emphasized is that according to the definition of OECD (OECD, 2003) rural areas are those where the population density is below 150 inhabitants/m². The goal of this research is to make the connection between the policy of rural development, women's education and the phenomenon of domestic violence in rural areas. The question that arises is whether the domestic violence occurs in rural areas? Probably the most common opinion is that it does not occur, because family members are always together (more often than in urban areas), that everyone has its own responsibilities, etc. However, the reality is much different since domestic violence in rural areas is more present than in urban (Kovačević, Ćejvanović, 2013).

The claim is confirmed by the results of the inquiry and indicators for Tuzla Canton, because what has been analyzed is characterized as a group of people registered as victims and their residence in rural areas. In most cases of domestic violence, women victims from rural areas do not know whom to ask for help, how to seek for it and they are ashamed of the community's reaction. Furthermore, they are not familiar with the term "Women's Shelter", and therefore they choose to go to the Centre of Social Work only if they need temporary financial support.

This is the proof that the consciousness of the society in this country is still on a low level. All levels of government, legislation regulations and media as well do not solve the problems of domestic violence in a correct way. Majority of population who live in these rural areas consider domestic violence as a part of upbringing method or usual communicative skill. It is also important to add that the problem lies in the fact that people are uninformed and do not have enough knowledge about the problem both in rural areas and in urban areas. Women are also unwilling to talk about domestic violence because they consider it to be a part of private life which is not supposed to be shared with public.

Domestic violence as criminal offense

Bosnia and Herzegovina has managed to implement an adequate framework of law in accordance with international standards in the field of domestic violence. Based on that, criminal law has been reformed and prior to that, domestic violence was considered to be a part of private sphere and was not characterized as violation of fundamental human rights and freedom. With this reform of criminal law in 2003, Bosnia and Herzegovina defined domestic violence as criminal offense in the Criminal Law of Federation of Bosnia and Herzegovina. Domestic violence has been defined as specific criminal offense by the Article of Criminal Justice Law 222 (Official Gazette of FBiH, no. 36/2003). Incrimination of domestic violence enabled the analysis of this problem which was conducted by state institutions within their jurisdiction, as holders of human rights protection. Bosnia and Herzegovina is working to end it preventively (by giving a warning that this type of behaviour is unacceptable and society will not tolerate it) and repressively (by punishing the perpetrators). However, in order to fight with this behaviour more effectively, it is necessary to re-socialize the perpetrator by introducing special measures to protect victims (such as for e.g. psychosocial treatment and

treatment of addiction) in order to affect the perpetrator to change his attitudes and behaviour. Protective measures are prescribed by the Law on Protection against Domestic Violence (Official Gazette of FBiH, no. 20/2013). Despite of the domestic violence incrimination, all problems of victims have not been solved. The legal proceedings take quite a long time, and victims cannot get effective protection on time. Apart from this, another issue appeared, professionals (the police, prosecutors, judges, social workers) are not enough educated and there is also lack of multidisciplinary approach in solving the problem of domestic violence. One of the possible reasons of insufficient education in the first 2-3 years since the criminal law in Bosnia and Herzegovina has been established lies in the fact that domestic violence represents completely new criminal offense which did not exist in Bosnia and Herzegovina's criminal law before.

Women as victims of domestic violence

When the issue of domestic violence is being examined, it is necessary to isolate its manifestation and that is: violence against woman- wife and separately against other family members. It is interesting to notice that one of the main causes of violence is considered to be the system of relationships established in society in terms of unequal power distribution. Unequal distribution of power between men and women existed throughout history in all periods of society. Women are exposed to different types of violence: physical, sexual, psychological and economic, and the roots of violence lie deeply in the structure of society (Idžakovic et al., 2012). According to the analysis of domestic violence myths, violence against women recognizes no social and economic differences. It happens everywhere and on all social levels and groups. Apart from that, women's education also makes no difference when it comes to violence. Women's professions do not change their partner's violent behaviour. These mentioned myths characterize all states around the globe and domestic violence exists in all countries in the world.

Prevention and intervention in the field of domestic violence involves a system of measures and activities which society and its institutions use to confront a specific social problem. That is one of the questions connecting women around the globe. When discussing the presence of domestic violence, this research began with assembling the data about number of reports on committed criminal offense "domestic violence". The police officers have assembled the data in the area of Tuzla Canton according to canton's prosecution authorities for the period 2006-2012 (MIATC, 2013b). It is presented in Table 1.

Table 1. Coordinated statistics about reports on criminal offense "Domestic violence" in accordance with Article 222 of Criminal Justice Law of Federation of Bosnia and Herzegovina in the period of 2006-2012

Period	The number of reports on criminal offense "Domestic violence" according to prosecution's authorities of Tuzla Canton
2006	93
2007	115
2008	129

Period	The number of reports on criminal offense "Domestic violence" according to prosecution's authorities of Tuzla Canton
2009	100
2010	129
2011	162
2012	183

Source: Author's analysis according to data from MIATC, 2013b.

In this section of the work, the results in the past three years (2010, 2011 and 2012) will be analyzed. The presented data in Table 1 show that the number of criminal offenses of domestic violence tends to increase. In 2010, the number of reports on criminal offense "domestic violence" directed towards Tuzla Canton's prosecution authorities was 129 cases. In 2011, 162 reports on criminal offense "domestic violence" were registered. In 2012, there was even larger increase of criminal offences per 21 (183 reports to Tuzla Canton's prosecution authorities). The increase of reports has been visible since 2006. There is a striking increase of reports year in year out, which can be connected to the rise of victims' awareness, respectively women's awareness as the most common victims of domestic violence. That is the result of many campaigns by governmental and non-governmental organizations in order to prevent domestic violence by informing, counselling, distribution of leaflets, brochures, and other campaigns. The research conducted in the area of Tuzla Canton (Bosnia and Herzegovina) proves that domestic violence is present in our society and environment. In table 2, the number and structure of female victims are presented for the years 2010-2012. In 2010, the number of victims was 145,124 of which were women.

Table 2. The number and structure of female victims for the period of 2010-2012

Female victims of violence	The number of victims according to their age and involvement in violence								
	2010			2011			2012		
	Total no. of victims	No. of female victims	%	Total no. of victims	No. of female victims	%	Total no. of victims	No. of female victims	%
Wives(current and former)		90	72.58		116	82.86		114	71.25
Mothers		14	11.29		16	11.43		20	12.5
Daughters		16	12.9		6	4.28		18	11.25
Sisters, sisters-in-law, grandmother, stepmothers		4	3.23		2	1.43		8	5
TOTAL	145	124	100	183	140	100	200	160	100

Source: Author's analysis according to data from MIATC, 2013b.

In Table 2, it is evident that the most common victims are wives and ex-wives as well (72.58 Sisters, sisters-in-law, grandmothers, stepmothers Sisters, sisters-in-law, grandmothers, stepmothers %). In the same year, there were 12.9 % of daughters abused by their fathers, which is extremely concerning phenomenon in the society. Mothers of abusers are also (11.29%) their victims because they usually live in the same household with son and his family. Sisters, sisters-

in-law, mothers-in-law, and stepmothers are victims of domestic violence likewise (3.23%). In 2011, 183 victims of violence were registered, 140 of which were female victims. Table 2 also shows the structure of female victims in 2011. In this year the most common female victims were wives and ex-wives 82.86 %. After wives, there are mothers (11.43%), then daughters (4.28%), and in the end there are sisters, sisters-in-law, grandmothers, mothers-in-law and stepmothers as victims of domestic violence (1.43%). In table 2, the analysis of 2012 shows that out of 200 victims of domestic violence 160 were females. As victims of domestic violence there were registered: wives (71.25%), mothers (12.5%), daughters (11.25%), sisters, sisters-in-law, grandmothers, mothers-in-law and stepmother (5%).

Age structure of female victims of domestic violence

The aim of this inquiry was to establish the age structure of women who are victims in domestic violence. The data analyzed are just for 2012, because in this particular year, 160 women have been registered as victims of domestic violence in Tuzla Canton. The analysis shows (table 3) that the major number of victims is between 45-60 years old, them 63 or 39.6%, then victims of 30-45 years old, them 41 or 25.6%. After these, there are women who are between 18-30 years old, them 32 or 20%, then women older than 60 years, them 15 or 9.3%, and at the end there are children younger than 18 years, them 9 or 5.5%.

Table 3. The age structure of female victims of domestic violence for 2012 in the region of Tuzla Canton

The age of female victims	Number of victims	%
Below 18 years	9	5.5
From 18 – 30	32	20
From 30 – 45	41	25.6
From 45 – 60	63	39.6
Below 60	15	9.3
Total	160	100

Source: Author's analysis according to data from MIATC, 2013b.

It can be seen in table 3 that the major population of women victims of domestic violence is between 45 and 60 years old (39.6%), then the age category from 30 to 45 years which matches the age category of married women. Also, in table 2, it can be seen that married women are most affected by domestic violence.

Women and education

Education is the strongest indicator of women's strengthening in Bosnia and Herzegovina. By careful examination of law regulations, it is established that everybody has the same right to education. The primary education is free and mandatory for everyone. Because of the patriarchal society in our country, education is not considered to be obligatory for women, but that her obligations need to be aimed towards home and family. The bad economic position is in the immediate relationship with the educational restraints. Therefore, the women's economic dependency gives the men the power to treat his wife in

a violent way (Berbič, 2005). According to the data from Agency for Statistics in Bosnia and Herzegovina, the number of unemployed people in 2010 is analyzed with regard to educational field and sex, and the results are presented in table 4.

Table 4. The number of unemployed people according to educational field in Federation of Bosnia and Herzegovina (situation in 31.12.2011.)

Group	Total	Unqualified	Semi-qualified and low-qualified	Qualified and high-qualified	Vocational education	ISCED 4	ISCED 5A
Women	190,781	64,661	3,690	52,798	54,193	3,189	12,250
Men	180,309	54,137	5,612	76,901	35,754	1,745	6,160
Total	371,090	118,798	9,302	129,699	89,947	4,934	18,410

Source: Agency for Statistics in Federation of Bosnia and Herzegovina, 2011.

It can be seen from the presented data in table 4, that the rate of unemployed women is smaller than the rate of unemployed men just in the case of semi-qualified and low-qualified field, and in the case of qualified and high-qualified field.

Table 5. Population's working ability according to activity and sex for 2011 in Federation of Bosnia and Herzegovina

Group	Working ability	%	Labour force	Employed people	%	Unemployed people
Women	828,000	51.4	247,000	168,000	35	79,000
Men	783,000	48.6	431,000	312,000	65	119,000
Total	1,611,000	100	678,000	480,000	100	198,000

Source: Agency for Statistics in Federation of Bosnia and Herzegovina, 2011.

The total number of people able to work according to activity and sex in Federation of Bosnia and Herzegovina can be seen from table 5, and that 828 000 (51.4%) are women and 783 000 (48.6%) are men. When analyzing the data, it is obvious that the total number of employed women is 35% and the total number of employed men is 65%. Using the sample on which the inquiry is conducted, the female victims' level of education is analyzed. The education is divided into four categories: uneducated, primary school, high school and college. It is possible to see the level of education in the Tuzla Canton from 2012 in Table 6.

Table 6. The victim's level of education

Level	Number of victims	%
Uneducated	18	11.26
Primary school	81	50.62
High school	60	37.5
College	1	0.63
Total	160	100.00%

Source: Author's analysis according to data from MIATC, 2013a.

It can be seen from table 6, according to the sample on which the inquiry is conducted, that the majority of victims of domestic violence have finished primary school (50.62%), then high school (37.5%), and at the end come women victims who are uneducated (11.26%) and who have graduated from college (0.63%). The women of higher education are usually employed and independent of partner, which means that if they become victims, they tend to solve the problem quickly by divorcing from their partner and continuing their life without violence. The women who have low or no education are usually unemployed, and therefore are economically dependent of their partners. Except from that, they do not have any other property than the shared one with the partner, so they decide not to leave him and accept to be a victim for the rest of their lives.

Women in rural areas and domestic violence

Domestic violence is evident in the rural areas. That can be best seen from Table 7 in which the females registered as victims of domestic violence for 2010, 2011 and 2012 in Tuzla Canton are from the rural areas. It is necessary to point out that the actual number is much bigger and that women deny reporting this kind of discrimination due to fear, dependency and lack of information. Because of that, the problem stays within in a family. Small number of women knows from whom to seek for help and whom to call if the problem arises. Most of them have never even heard of the women's shelter, which is not the case in urban areas. The number of offenses "domestic violence" is presented in Table 7 by municipalities (divided rural and urban area) of Tuzla Canton for 2010, 2011 and 2012.

Table 7. The offenses "domestic violence" by municipalities in Tuzla Canton (period 2010-2012)

PERIOD	Banovići	Čelić	Doboj Istok	Gračanica	Gradačac	Kalesija	Kladanj	Lukavac	Sapna	Srebrenik	Teočak	Tuzla	Živinice	TOTAL
2010	2	3	1	6	19	12	6	4	2	9	2	43	20	129
2011	7	5	3	5	17	11	6	11	4	25	1	35	32	162
2012	2	2	4	8	22	20	1	18	1	17	/	59	29	183

Source: Author's analysis according to data from MIATC, 2013b.

It can be seen from table 8 that the rate of domestic violence is 78.4% in rural area for 2010 in Tuzla Canton and in urban area 21.6%. From the same table, it is possible to notice that the rate of domestic violence in rural area in Tuzla Canton for 2011 is 66.6% and in urban area 33.34%. Table 8 also shows that the rate of domestic violence in rural area in Tuzla Canton for 2012 is 67.75% and in urban area 32.25%.

Table 8. Domestic violence in rural and urban area in Tuzla Canton (period 2010-2012)

Area	Number of reports on criminal offense "domestic violence" of the Article 222 of the Criminal Justice Law of FBiH					
	2010		2011		2012	
	Number of victims	%	Number of victims	%	Number of victims	%
Urban	43	33.34	35	21.6	59	32.25
Rural	86	66.66	127	78.4	124	67.75
Total	129	100	162	100	183	100

Source: Author's analysis according to data from MIATC, 2013b.

Measures for improvement of the quality of women's life in rural areas

The first thing that needs to be emphasized, when discussing measures in the rural development policy, is the importance of measures of economic and social policy and the process of education in rural areas. Likewise, it is necessary to promote the policy of rural development by increasing sex-gender equality, in a way where it is necessary to reallocate responsibilities of holders of rural development policy. It has been noticed that the active necessary infiltration of women into the labour market demands the mobilization of other resources. Holders of rural development policy could improve the programs for the care and education of children, or ensure social protection and public pensions in order to create opportunities for women to participate more actively and productively in the economies of the rural area. Likewise, it is necessary to increase the representation of women in employers' organizations, farmer or trade unions, and it represents an important element in creating the rural development policy. The negotiating power of women will increase with this approach, and it will also serve as a reminder to the creators of the policy that the empowerment of women is a good approach to fight poverty and improve the existential conditions of the rural population. It is interesting to emphasize here that the organization "Vesta" from Tuzla has conducted a research on the condition, needs and possibilities for the improvement of women's position in rural areas within the project "Socio-economic empowerment of the women's position from rural areas through active participation in local development plans".

The research is based on the surveys and workshops with a total of 450 women from the area of 17 rural municipalities in 37 rural local communities in the Federation of Bosnia and Herzegovina. The research results indicate a high level of dissatisfaction with the evaluation of the role of women in the rural areas, according to the claims of about 80% of respondents. The conducted research and interviews with women in rural areas have pointed to a number of problems, including in particular difficult approach to institutions of support, resources, information-advisory support, while traditional stereotypes and barriers limit more significant involvement of women from rural areas in socio-economic processes. Family concept of farming includes the unpaid work of women and lack of social involvement in resolving common problems that isolates a woman from rural areas in decision-making processes. The research indicates the encouraging fact that even 59.56% (268) of respondents confirmed that starting small business initiatives (through the production of healthy food, medicinal herbs, rural tourism, greenhouse production, flower growing, handicrafts, etc.) can contribute to a better economic position of women in rural areas. There are 26.00% (117)

of the respondents who claim that it is possible to some extent. In contrast to these findings, 6% (27) of respondents pointed that it is possible but to a very limited extent, and that it is not possible at all thought only 1.11% (5), while 7.33% (33) stated that they did not know the answer to the question (VESTA, 2012). A significant percentage of 85.56% (59.56% + 26.00%) of respondents confirmed that starting small business initiatives can in a large or sufficient measure contribute to better economic position of women in the rural areas, which is encouragingly high percentage that indicates the need for development of support programs aimed at the improvement of the economic position of women from rural areas through diversification of products and services that women from rural areas can provide, with the necessary support.

Hence, educational support and financial incentives to the development of not only agronomic, but also small service businesses can be one of the key generators of improvement of the women's economic position in rural areas, and the revitalization and development of rural areas. The positive examples of support for the economic empowerment of women from rural areas and organized forms of action are encouraging. The analysis of the research results, regarding the willingness of respondents to engage in the work of women organizations, forming solidarity groups or similar forms of organization with the aim of better representation of interests and needs of women, indicated the positive attitude of women towards this form of action. The results of mentioned research project show that 84.66% of respondents confirmed their readiness to engage in the work of women organizations, forming solidarity groups or similar forms of organization with the aim of better representation of interests and needs of women. Based on the answers, as well as statements of respondents themselves, the projects which would support the organized activities of women are welcomed, because there are not many communities in which women can self-organize without initial external support. It is absolutely clear that for more serious progress towards strengthening the position of women in rural areas, it is necessary for all actors of policy of rural development to recognize problems and give comprehensive support that will ensure equal participation of women from rural areas in all socio-economic processes (VESTA, 2012). Furthermore, when problematics of rural development policies are observed, it is important to emphasize that services focused towards the support of entrepreneurship with women at the forefront in rural development is of utter importance, including better access to information, training-education and adequate professional prequalification.

Women need to invest their time in education to acquire professional skills, so they could improve their knowledge. However, the question of balancing work and familial obligations is current topic in most economical sectors, especially in agricultural and rural development sector. This is one of the main obstacles for increased engagement of women in managerial positions and bigger role of women from rural areas. In general, policy and rural development measures depend on legislation regulative. What is to be achieved here is a synthesis of the principles of rural development policy and the problems of domestic violence. Policy holders have tried, in that context, to adopt series of measures that would improve the quality of life in rural areas and reduce domestic violence. For example,

Bosnia and Herzegovina, in order to abate the situation from 2006, brought in the Law on Protection against Domestic Violence, which is primarily intended to protect the victims of domestic violence, until the criminal procedure is executed.

The protection of victims is conceived through the implementation of protective measures by the competent municipal courts, such as: removal from the apartment, home or other residential facility and prohibition of retracing in such, restraining order, prohibition of harassment or stalking victims of violence, mandatory psychosocial treatment, mandatory treatment of addiction, and the possibility for arresting the person who committed domestic violence. All of these are measures whose intention is to protect the victim from the bully -perpetrators of domestic violence, until the criminal procedure is executed. However, the practice of implementation of these measures is weak, and the difficulties which were encountered during the implementation of the old law on protection against domestic violence will try to be overcome by the adoption of the new Law on Protection against Domestic Violence, applied from 15.3.2013. In the context of legislative activities, it should be emphasized here that Bosnia and Herzegovina, by the reform of the criminal law from 2013, defines domestic violence as a criminal offence under Article 222 of the Criminal Justice Law of the Federation of Bosnia and Herzegovina. One of the possible measures of preventing domestic violence is providing safe shelters for victims. Usually the shelters for victims are established and organized by non-governmental organizations (NGO) which exist in Bosnia and Herzegovina, but according to the author, in insufficient numbers. Holders of public policies give symbolic support to the work of these shelters for victims. In the case of violence against women, they seek refuge in so-called 'Safe houses'.

What should be celebrated in the future in order to raise consciousness of women in rural areas is World Rural Women's Day (15th October). The very idea was launched at the conference of the United Nations dedicated to women held in Peking in 1995. It was decided that the 15th October is devoted to all women in rural areas in the world and to their problems. The purpose of celebrating this day is to strengthen in long term the position of women in rural areas, and to encourage them to participate more actively in society.

It is important to point out that it is necessary to gradually change the perception of gender and sex roles, spreading awareness about the importance of women's empowerment. Gender equality must not be seen as a threat, but as an opportunity. Rural societies are heavily influenced by traditional norms which predispose women to the role of mother and guardian, and in this way prevent them from developing their professional careers and limit their access to important property resources.

Violence against women, including the domestic violence, is a severe form of violation of human rights of women. The measures for suppression of domestic violence against women include raising the public consciousness about this phenomena, problems and ways of suppressing the gender-based violence, improving the protection of the rights of women who are victims of different sorts of violence, inter-sector cooperation, coordination of competent state bodies, institution and organization of civil society and training of competent authorities and other organizations dealing with situation of women in rural areas.

Conclusion

Domestic violence as a form of crime is on the rise, and the victims are mostly women. Through this research, which was conducted in the area of Tuzla Canton (Bosnia and Herzegovina), it can be seen that the victims of domestic violence are mostly females, namely: wives, mothers, daughters and other female family members. The research showed the continuing tendency of growth in the number of female victims (124 in 2010, 140 in 2011 and 160 female victims in 2012.) Moreover, it is noticeable that both wives and ex-wives are in the first place as the victims of domestic violence.

Furthermore, when analyzing the age structure of female victims one can see from the research that those are mostly women of the age between 45 and 60 and women of the age between 35 and 45, corresponding to the group of wives who are most abused at home.

When analyzing the educational field of the victims one can see that the victims are mostly women with primary and secondary education, then women with no education, and finally women with high education. Domestic violence is present in urban and especially in rural areas, and it represents a widespread problem that needs to be solved institutionally and multidisciplinary. Domestic violence is the initiator of other criminal offenses, and the most dangerous product of domestic violence is juvenile delinquency.

On the basis of the research in the area of Tuzla Canton, it is evident that domestic violence is more present in families in rural areas than in urban areas. One of the problem is that women in rural areas do not know whom to turn to when the violence occurs and how to seek help, or they are embarrassed of the community's reaction and are not familiar with the term 'Safe house'. It can be concluded that awareness of people in rural areas about the problem of domestic violence is still on a low level.

It should be noted that the problem of domestic violence should be the concern of not only all the levels of authority and law regulations, but also of media and the entire non-governmental sector (including non-governmental organizations, civil society and competent groups of society). It should also be emphasized that special attention should be paid to measures of rural development policy (Černič Istenič, 2002) in the domain of economic independence of women in rural areas, social policy in order to alleviate poverty, and also to education of women with a view to long-term resolution of violence against women (Žutinić, 2003).

It is necessary that domestic violence is not considered as a part of educational method or an usual way of communication, but to consider it as economic, social and educational problem that needs to be solved. There is a lack of awareness of the public about the occurrence of this problem and people, especially in rural areas, are not sufficiently informed. Therefore, it is essential to solve this problem in long-term.

It is also essential that women become braver and bolder when talking about domestic violence and to stop considering this problem as their personal matter that does not concern the public. In the end, it can be concluded that social marginalization, lack of

opportunities for employment of women in rural areas, the dominance of discriminatory social practices, lack of victim's will to endure in the legal proceedings as well as the absence of help from the responsible institutions represent the problem of the continuing existence of domestic violence.

Literature

1. Agency for Statistics in Federation of Bosnia and Herzegovina (2011): *Federacija Bosne i Hercegovine u brojkama*, Sarajevo, BiH, available at: www.fzs.ba/Podaci/ Federacija%20BiH%20u%20brojkama%202011.pdf accessed at: 21st March 2013.

2. Antić, G. (2000): *Ne-srečno razmerje strankarska politikain ženske v državah srednje in vzhodne Evrope*, Družboslovne razprave, vol. 16, no. 34/35, pp. 127-139, Ljubljana, Slovenia.

3. Association pour le Developpement des Echanges internationaux de Produits et Techniques Agroalimentaires (ADEPTA), (2011): *101 pitanje za ženu iz ruralnih područja, rezultati istraživanja o statusu, svijesti i potrebama ruralnih žena u Republici Hrvatsko*, Ministrastvo poljoprivrede, ribarstva i ruralnog razvoja, Zagreb, Hrvatska.

4. Berbič, A. (2005): *Uključenost žena u strategiju ruralnog razvoja*, Sociologija sela, vol. 43, pp. 803-821.

5. Černič Istenič, M. (2002.): P*redlog nacionalnega programa za vključevanje žensk v razvoj podožela*, Biotehniška fakulteta, Ljubljana, Slovenija.

6. *Criminal Justice Law of the Federation of Bosnia and Herzegovina*, Official Gazette of FBiH, no. 36/2003, Sarajevo, BiH.

7. Government of Republic of Croatia (GRC), (2009): *UN Konvencija o uklanjanju svih oblika diskriminacije žena*, Vlada Republike Hrvatske, Ured za ravnopravnost spolova, Zagreb, available at: www.ured-ravnopravnost.hr/site/preuzimanje/biblioteka-ona/14-UN-konvencija.pdf

8. Idžakovic, F. Catovic, A., Žigic, R., Vlaho, M., Brajkovic, M., Petric, A. (2012): *Analiza politika socijalnog uključivanja žena žrtava nasilja u porodici*, Udružene žene, Banja Luka, BiH.

9. Kovačević, A., Ćejvanović, F. (2013.): *Politika ruralnog razvoja i njezin utjecaj na obrazovanje žena u odnosu na nasilje u obitelji*, Globalizacija i regionalni identitet, na temu Uloga obrazovanja u identitetu društva i ekonomiji znanja, IV znanstveni skup, Poljoprivredni i Ekonomski fakultet, Osijek, Hrvatska, pp. 197-204.

10. *Law on Protection against Domestic Violence*, Official Gazette of FBiH, no. 20/2013, Sarajevo, BiH.

11. Ministry of Internal Affairs of Tuzla Canton (MIATC), (2013a): *Report on the work of the Ministry of Internal Affairs of Tuzla Canton*, (for the period 2006-2012), MIATC, Tuzla, B&H.

12. Ministry of Internal Affairs of Tuzla Canton (MIATC), (2013b): *Information on security in Tuzla Canton* (for the period 2006-2012), MIATC, Tuzla, B&H.

13. OECD (2003): *Territorial indicators of socio economic patterns and dynamics*, document no. DT/TDPC (2002)23, OECD, available at: http://oecd.org/ dataoecd/42/16/15181756.doc

14. VESTA (2012): *Gender i ruralni razvoj - dobre prakse i institucionalni okvir*, Udruženje VESTA, Tuzla, Bosna i Hercegovina.

15. WHO Global Consultation on Violence and Health (1996): *Violence: A public health priority,* WHO/EHA/SPI.POA.2), World Health Organization, Geneva.

16. Žutinić, Đ. (2003): *Obrazovanje i ruralni razvoj*, zbornik radova, znanstveni skup - Održivi razvoj ruralnih područja Hrvatske i uloga Sveučilišta, Mali Lošinj, Hrvatska, p.p. 38-49

UTICAJ POLITIKE RURALNOG RAZVOJA NA NASILJE U PORODICI

Ferhat Ćejvanović[6], Alma Kovačević[7] Zoran Grgić[8], Aleksandar Maksimović[9], Vesna Miletić[10]

Sažetak

Politika ruralnog razvoja *bavi se ostvarivanjem ciljeva za ruralna područja i obuhvata širok dijapazon različitih socio-ekonomskih aktivnosti. Intencija ovog rada je napraviti spoj i sponu politike ruralnog razvoja i pojave nasilja u obitelji na ruralnom području. Područje istraživanje je teritorijA tuzlanskog kantona (Bosna i Hercegovina), koja po definijci OECD-a (ispod 150 stanovnika/km^2) spada u pretežno ruralno područje. Nasilje u porodici je rasprostranjen vid nasilja i diskriminacije žena. Nasilje u porodici podrazumjeva sve oblike nasilja koji se događaju u porodici, proširujući mogućnost da počinitelji nasilja i žrtve nasilja mogu biti sve osobe koje ne žive u porodici ali su povezani članovi porodice, kao što su bivši partneri, rodbina i sl.*

Rezultati istraživanja pokazuju da su žrtve nasilja u porodici 90% žene (supruge, majke, kćerke, sestre i sl.), i da je nasilje u porodici u stalnom porastu iz godine u godinu. Svi vidovi nasilja nad ženama proističu iz načelne diskriminacije prema ženi što rezultira silu ili prinudu. Stoga je nasilje nad ženama manifestacija fundamentalno nejednakog položaja žena i muškaraca i predstavlja vid diskriminacije žena. U ovom radu korišteni su izvori podataka Zavoda za statistiku Federacije Bosne i Hercegovine i statistički podaci Ministarstva unutarnjih poslova tuzlanskog kantona. Na osnovu prikupljenih podataka korištena je deskriptivna metoda, metoda analize i sinteze, kao i komparativna metoda analize. U radu se pošlo od pretpostavke da su „žene u ruralnom području više žrtve nasilja u porodici od žena koje žive u urbanom području".

Ključne riječi: *nasilje u porodici, politika ruralnog razvoja, ruralno područje, žrtva nasilja, krivično djelo.*

---

6   Dr. sc. Ferhat Ćejvanović, vanredni profesor, Vlada Brčko distrikta, spoljni saradnik Ekonomskog fakultata u Tuzli, Univerzitetska 8, 75000 Tuzla, BiH, Telefon: +087 35 320 820, E-mail: ferhat.cejvanovic@gmail.com

7   Mr. sc. Alma Kovačević, Ministarstvo unutrašnjih poslova tuzlanksoj kantona, Aleja Alije Izetbegovića 28, 75000 Tuzla, BiH, Telefon: +387 61 283 058, E-mail: alma.kr@bih.net.ba

8   Prof. dr Zoran Grgić, redovni profesor, Poljoprivredni fakultet, Svetošimunska cesta 25, 10000 Zagreb, Hrvatska, Telefon: +385 1 239 3760, E-mail: zgrgic@agr.hr

9   Aleksandar Maksimović, M.Sc., Visoka škola za kompijutere i poslovnu komunikaciju - eMPIRICA, Bulevar mira 8, 76100 Brčko, BiH, Telefon: +387 65 908 494, E-mail: a.maksimovic22@gmail.com

10 Doc. dr Vesna Miletić, Fakultet poslovnih studija Vršac, Megatrend Univerzitet, Omladinski trg 17, 26300 Vršac, Srbija, Telefon: +381 64 234 54 89, E-mail: vmiletic68@gmail.com

Respected reviewers,

I would like to thank you on selfless contribution you gave in the process of quality improvement of the papers published in the journal Economics of Agriculture during 2014.

Editor - in - Chief
Prof. dr Drago Cvijanović

LIST OF REVIEWERS IN 2014

1. Prof. Eirik Romstad, Ph.D., Norwegian University of Life Sciences, Ass, Norway;
2. Prof. Kenneth Thomson, Ph.D., University of Aberdeen, Scotland, UK;
3. Prof. Donatella Privitera, Ph.D., University of Catania, Italy;
4. Prof. Marco Platania, Ph.D., University of Catania, Italy;
5. Prof. Wolfgang Rohrbach, Ph.D., University in Wien, Austria;
6. Klaus Wagner, Ph.D., Federal Institute of Agricultural Economics, Vienna, Austria;
7. Prof. Marina Lescheva, Ph.D., Stavropol State Agrarian University, Russian Federation;
8. Prof. Olga Kusakina, Ph.D., Stavropol State Agrarian University, Russian Federation;
9. Anna Ivolga, Ph.D., Stavropol State Agrarian University, Russian Federation;
10. Vasily Erokhin, Ph.D., Moscow University of Finance and Law (MFUA), Russian Federation;
11. Oleksandr Labenko, Ph.D., National University of Life and Environmental Science of Ukraine, Kyiv, Ukraine;
12. Prof. Laszlo Mago, Ph.D., Szent Istvan University, Faculty of Mechanical Engineering, Budapest, Hungary;
13. Prof. Sandor Somogyi, Ph.D., Pannon University, Kesthely, Hungary;
14. Prof. Andrew Fieldsend, Institute of Agricultural Economics, Budapest, Hungary;
15. Zbigniew Floriańczyk, Ph.D., Institute of Agricultural and Food Economics - National Research Institute, Warsaw, Poland;
16. Wieliczko Barbara, Ph.D., Institute of Agricultural and Food Economics - National Research Institute, Warsaw, Poland;
17. Prof. Ivan Salamon, University of Presov, Slovakia;
18. Adam Wasilewski, Ph.D., Institute of Agricultural and Food Economics, Warsaw, Poland;
19. Prof. Iuliana Ionel, Ph.D., Romanian Academy - Institute of Agricultural Economics, Bucharest Romania;
20. Prof. Marius Voicilas, Ph.D., Romanian Academy - Institute of Agricultural Economics, Bucharest Romania;

21. Prof. Cornelia Alboiu, Ph.D., Romanian Academy - Institute of Agricultural Economics, Bucharest Romania;

22. Prof. Claudiu Cicea, Ph.D., Academy of Economic Studies, Bucharest, Romania;

23. Prof. Gabriel Popescu, Ph.D., Bucharest University of Economics Studies, Romania;

24. Prof. Adrian Stancu, Ph.D., Petroleum Gas University, Faculty of Economy, Ploiesti, Romania;

25. Prof. Corina Ene, Ph.D., Petroleum Gas University, Faculty of Economy, Ploiesti, Romania;

26. Prof. Mariana Eftimie, Ph.D., Petroleum Gas University, Faculty of Economy, Ploiesti, Romania;

27. Jean Vasile Andrei, Ph.D., Petroleum Gas University, Faculty of Economy, Ploiesti, Romania;

28. Prof. Dorel Dusmanescu, Ph.D., Petroleum Gas University, Faculty of Economy, Ploiesti, Romania;

29. Prof. Paul Pirsan, Ph.D., Banat University of Agricultural Sciences and Veterinary Medicine, Timisoara, Romania;

30. Prof. Darina Georgieva Zaimova, Ph.D., Trakia University, Faculty of Economics, Stara Zagora, Bulgaria;

31. Prof. Yulyana Yarkova, Ph.D., Trakia University, Faculty of Economics, Stara Zagora, Bulgaria;

32. Prof. Maria Radoslavova Stanimorova, University of Economics, Varna, Bulgaria;

33. Oksana Ryabchenko, Ph.D., National University of Life and Environmental Sciences of Ukraine, Kiev, Ukraine;

34. Vesna Miličić, Ph.D., University of Ljubljana, Faculty of Biotechnology, Slovenia;

35. Prof. Ferhat Ćejvanović, Ph.D., Government of Brčko District, Bosnia and Herzegovina;

36. Grujica Vico, Ph.D., Faculty of Agriculture, University of East Sarajevo, Bosnia and Herzegovina;

37. Prof. Gordana Rokvić, University in Banja Luka, Faculty of Agriculture, Bosnia and Herzegovina;

38. Prof. Željko Vaško, University in Banja Luka, Faculty of Agriculture, Bosnia and Herzegovina;

39. Prof. Slobodan Stanišić, Ph.D., Pan European University Aperion, Banja Luka, Bosnia and Herzegovina;

40. Prof. Zijad Džafić, Ph.D., University in Tuzla, Faculty of Economics, Bosnia and Herzegovina;

41. Prof. Blagica Sekovska, Ph.D., Faculty of Veterinary Medicine, Skopje, Republic of Macedonia;

42. Prof. Elenica Sofijanova, Ph.D., Goce Delčev University, Faculty of Economics, Štip,

Republic of Macedonia;

43. Prof. Mile Peševski, Ph.D., University Ss Cyril and Methodius, Faculty of Agricultural Sciences and Food, Skopje, Republic of Macedonia;

44. Prof. Zoran Grgić, Ph.D., University of Zagreb, Faculty of Agriculture, Croatia;

45. Prof. Janko Radulović, Ph.D., Mediterranean University, Podgorica, Montenegro;

46. Prof. Bogdan Bulatović, Ph.D., Faculty of Biotechnology, Podgorica, Montenegro;

47. Prof. Sanjin Ivanović, Ph.D., University in Belgrade, Faculty of Agriculture, Serbia;

48. Prof. Đorđe Glamočlija, Ph.D., University in Belgrade, Faculty of Agriculture, Serbia;

49. Prof. Dragica Božić, Ph.D., University in Belgrade, Faculty of Agriculture, Serbia;

50. Prof. Vlade Zarić, Ph.D., University in Belgrade, Faculty of Agriculture, Serbia;

51. Prof. Zorica Vasiljević, Ph.D., University in Belgrade, Faculty of Agriculture, Serbia;

52. Prof. Branka Kalanović Bulatović, Ph.D., University in Belgrade, Faculty of Agriculture, Serbia;

53. Prof. Zoran Rajić, Ph.D., University in Belgrade, Faculty of Agriculture, Serbia;

54. Prof. Dragić Živković, Ph.D., University in Belgrade, Faculty of Agriculture, Serbia;

55. Vladimir Zakić, Ph.D., University in Belgrade, Faculty of Agriculture, Serbia;

56. Prof. Dejan Malinić, Ph.D., University in Belgrade, Faculty of Economics, Serbia;

57. Prof. Nikola Fabris, Ph.D., University in Belgrade, Faculty of Economics, Serbia;

58. Prof. Ivan Milojević, Ph.D., Military Academy, University of Defense, Belgrade, Serbia;

59. Prof. Branislav Vlahović, Ph.D., University in Novi Sad, Faculty of Agriculture, Serbia;

60. Prof. Mirjana Lukač, Ph.D., University in Novi Sad, Faculty of Agriculture, Serbia;

61. Prof. Nebojiša Novković, Ph.D., University in Novi Sad, Faculty of Agriculture, Serbia;

62. Prof. Zoran Njegovan, Ph.D., University in Novi Sad, Faculty of Agriculture, Serbia;

63. Dejan Janković, Ph.D., University in Novi Sad, Faculty of Agriculture, Serbia;

64. Prof. Janko Veselinović, Ph.D., University in Novi Sad, Faculty of Agriculture, Serbia;

65. Prof. Dušan Milić, Ph.D., University in Novi Sad, Faculty of Agriculture, Serbia;

66. Tihomir Zoranović, Ph.D., University in Novi Sad, Faculty of Agriculture, Serbia;

67. Prof. Stanislav Zekić, Ph.D., University in Novi Sad, Faculty of Economics, Serbia;

68. Prof. Tomislav Sudarević, Ph.D., University in Novi Sad, Faculty of Economics, Serbia;

69. Jovana Čikić, Ph.D., University in Novi Sad, Faculty of Philosophy, Serbia;

70. Prof. Snežana Knežević, Ph.D., University in Belgrade, Faculty of Organisational Sciences, Serbia;

71. Prof. Dragana Gnjatović, Ph.D., University in Kragujevac, Faculty of Hotel Management and Tourism, Serbia;

72. Prof. Aleksandar Rodić, Ph.D., Institute Mihajlo Pupin, Belgrade, Serbia;

73. Branko Mihailović, Ph.D., Institute of Agricultural Economics, Belgrade, Serbia;

74. Prof. Jonel Subić, Ph.D., Institute of Agricultural Economics, Belgrade, Serbia;

75. Nataša Kljajić, Ph.D., Institute of Agricultural Economics, Belgrade, Serbia;

76. Tatjana Brankov, Ph.D., Institute of Agricultural Economics, Belgrade, Serbia;

77. Boris Kuzman, Ph.D., Institute of Agricultural Economics, Belgrade, Serbia;

78. Anton Puškarić, Ph.D., Institute of Agricultural Economics, Belgrade, Serbia;

79. Vesna Paraušić, Ph.D., Institute of Agricultural Economics, Belgrade, Serbia;

80. Prof. Jovan Zubović, Ph.D., Institute of Economic Sciences, Belgrade, Serbia;

81. Prof. Mirjana Radović Marković, Ph.D., Institute of Economic Sciences, Belgrade, Serbia;

82. Vladimir Filipović, Ph.D., Institute of Medicinal Plants Research - Dr Josif Pancic, Belgrade, Serbia;

83. Vladan Ugrenović, Ph.D., Institute Tamiš, Pančevo, Serbia;

84. Prof. Snežana Štetić, Ph.D., College of Tourism, Belgrade, Serbia;

85. Prof. Dario Šimičević, Ph.D., College of Tourism, Belgrade, Serbia;

86. Prof. Milan Počuča, Ph.D., Faculty of Law, Novi Sad, Serbia;

87. Svetlana Ignjatijević, Ph.D., FIMEK, Novi Sad, Serbia;

88. Prof. Rajko Tepavac, Ph.D, Faculty of Economics and Engineering Management, University Business Academy, Novi Sad, Serbia;

89. Prof. Hasan Hanić, Ph.D., Belgrade Banking Academy, Belgrade, Serbia;

90. Vlado Kovačević, Ph.D., Ministry of Agriculture, Belgrade, Serbia;

91. Prof. Zdravko Petrović, Ph.D., Union University, Faculty of Law, Belgrade, Serbia;

92. Biljana Panin, Ph.D., EDUCONS University, Novi Sad, Serbia;

93. Prof. Boško Vojnović, Ph.D., High School of Agriculture, Šabac, Serbia;

DETAIL INSTRUCTIONS TO AUTHORS WITH TEMPLATE FOR THE ARTICLES THAT WILL BE PUBLISHED IN JOURNAL ECONOMICS OF AGRICULTURE

The ECONOMICS OF AGRICULTURE is an international scientific journal, published quarterly by Balkan Scientific Association of Agricultural Economists (BSAAE) in cooperation with Institute of Agricultural Economics Belgrade (IAE) and Academy of Economic Studies Bucharest (ASE), in which are published original scientific papers (double reviewed), review articles, pre-announcements, book reviews, short communications and research reports. Research reports and book reviews will be accepted after previous consultation/invitation with/from either a journal Editor, or Editor of the book review, in accordance with the journal submission criteria.

The journal ECONOMICS OF AGRICULTURE accepts only articles submitted electronically on English language, as e-mail attachment to the following e-mail address: economicsofagriculture@ea.bg.ac.rs and 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) (in required format) that are necessary for further correspondence and full transparency of published article.

Submission of articles to the ECONOMICS OF AGRICULTURE implies that their content has not been published previously in English, or in any other language. Also, submitted papers should not be under consideration for their publication elsewhere (in some other journal) and their publication has to be approved by all authors with signed declaration. Publisher reserves right to verify originality of submitted article by use of specialized software for plagiarism detection.

REVIEW PROCESS

The articles submitted to the journal ECONOMICS OF AGRICULTURE will be double blind (peer) reviewed and must have two positive reviews consistent to the generally accepted scientific standards. The reviewer independently and autonomously evaluates the article and could give a positive review, suggest some corrections, or give a negative review. In case that the review reports are antagonistic (one is positive and the second one is negative) the final decision will be on third review. Manuscript returned to the author(s) for revision does not guarantee the publication acceptance after article correction. The final decision for publication will be made after repeated review of the revised manuscript. If the article is evaluated positively and accepted for publication, each author has to sign the warranty of paper originality and confirm the copyright transfer to the journal ECONOMICS OF AGRICULTURE.

RULES FOR TECHNICAL PREPARATION OF ARTICLES

These Instructions will give all necessary information to author(s), as well as template for the articles preparation before their submission for publication in the journal Economics of Agriculture. We are asking you to use this document with a maximal attention, in other words to realize it as a set of instructions and practical example that will contribute to easier and more efficient operation under your article within the all phases of journal editing. Articles that deviate from mentioned template are not be taken into consideration.

Page setup: Paper size: *width* 170 mm x *height* 240 mm; **Margins**: top/bottom 20 mm, left/right 18 mm; **Layout:** *header* 1,25cm, *footer* 1,25cm; **Orientation:** Portrait. Paper volume up to 30.000 characters (without spaces) or 15 pages is preferable. Articles should not be shorter than 10 pages. Depending on papers' quality, Editorial Board could also accept longer articles. Article has to be prepared electronically (on computer), in program **Microsoft Word XP** or some later version of this program.

Below is a detail **Template** (technical instructions) for correct preparation of articles that will be submitted to the journal Economics of Agriculture. You are asked to maximum possible follow the technical instruction given by the following template.

TEMPLATE: TITLE OF THE ARTICLE (CENTRED, TNR, SIZE 12, BOLD, ALL CAPITAL LETTERS, MAXIMUM IN TWO LINES)[1]

Anđela Marković[2], Petar Petrović[3], Mirko Mirković[4]

Summary

It is desirable that Summary contains up to 150 words, as well as to contain all essential paper elements, such as goal(s), used method(s), important results and general authors' conclusion(s).

During the summary writing, it should be used font Times New Roman (TNR), font size 11, Italic, alignment text Justify, line spacing single, with interspace of 6 pt between paragraphs, without indentation of the first line.

Please, avoid the use of the indexes and special symbols within the Summary, and define all abbreviations whenever they are used for first time. Do not cite references in Summary.

Author(s) from Serbia are submitting article title, summary, key words and information about themselves on Serbian language at the end of the article, after the list of used literature. Text of the Serbian and English version of Summary must match in every sense.

Key words: *note, maximally, five, key, words.*

JEL: *Q16, M24* (www.aeaweb.org/jel/jel_class_system.php)

---

1 Paper is a part of research within the project no. III 46006 - Sustainable agriculture and rural development in the function of accomplishing strategic objectives of the Republic of Serbia in the Danube region, financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia. Project period: 2011-2014. ***This segment is not obligatory within the paper***.

2 Anđela Marković, Ph.D., Principal Research Fellow, Institute of Agricultural Economics, Volgina Street no. 15, 11060 Belgrade, Serbia, Phone: +381 11 444 444/int 112, E-mail: andjela.markovic@iep.bg.ac.rs

3 Petar Petrović, Ph.D., Full Professor, University of Belgrade, Faculty of Agriculture, Nemanjina Street no. 6, 11080 Zemun, Serbia, Phone: +381 11 222 222, E-mail: petar.petrovic@gmail.com

4 Mirko Mirković, M.A., Assistant, University in Belgrade, Faculty of Forestry, Kneza Viseslava Street no. 1, 11000 Belgrade, Serbia, Phone: +381 64 33 33 333, E-mail: mirko.mirkovic@yahoo.com

Introduction

Please strictly follow the instructions on article formatting, as well as styles provided in this template. Do not change font size, interspace between paragraphs and line spacing to insert more text into a conditionally limited number of pages.

Editorial Board organizes process of review of submitted articles and selects papers for publication based on the performed review, in other words according to estimated quality of the articles by the appointed reviewers. However, the ultimate responsibility for the views, originality and stands within the articles is exclusively on author(s) of manuscripts.

Please follow the basic principles of scientific papers structuring and try as much as possible to write a paper with next segments: Introduction, Paper goals, Data sources, Methodology, Results with Discussion, Conclusion (with Recommendations), Literature, etc.

During the article writing, it should be used font **Times New Roman** (TNR), **font size 11**, alignment text **Justify**, **Line Spacing Single**, with **interspace of 6 pt between paragraphs**, **without indentation of the first line**. Articles should be written only in English. It is advisable to write the article in the third-person singular or plural with the use of active form. Before paper submission, please check grammatical and spelling mistakes by the spellchecker for the English language.

Sub-headings should be written by font **Times New Roman**, **font size 11**, **bold**, **centred**, only first letter capital, interspace between sub-heading and paragraph above 12 pt (**before 12 pt**), and interspace between sub-heading and paragraph below 6 pt (**after 6 pt**). Please use the writing style presented in this template.

Please define **abbreviations and acronyms** during their first occurrence within the text, even in case that they were previously defined in article summary. Do not use abbreviations in article title, unless they can not be avoided.

For **equations and formulas** use the Microsoft Equation Editor or addition for equations writing MathType (www.mathtype.com). Use of built-in equation editor within the program Word 2007 is not recommended. Please check if all symbols within the equations/formulas are defined (forthwith after equation/formula).

Reference (author(s) of quotes) has to be entered directly in the text of article in next form (Petrović, 2012; or Petrović, Marković, 2012; or Mirković et al., 2012). Please do not write them as indexes in square brackets [3] or in footnote. Try to use a footnote only in the case of closer explanation of certain terms, or clarification of real and hypothetic situations. Do not numerate the pages.

Tables have to be created within the text of article, not taken in the form of images from other documents. Tables should be numerated according to order of their appearance. Titles of the tables have to be given immediately above the table to which they relate.

Please use following style during their formatting. Title of the table should be set with the interspace 6 pt - before and 3pt - after, in font TNR, font size 11, alignment Justified. Text within the table should be written in the font TNR, font size 9. Bold the text in the heading. Sources and possible notes should be set with the interspace 3 pt above table (before). Sources and notes should be written in font TNR, font size 10, alignment Justified. Start with next paragraph at the interspace of 6 pt from the table source or note (after). During the article writing please mark in the main text all calls to a certain table (*Table 5.*). Try to fit all tables in article within the specified format of the page (Table properties – preferred width – max 97% - alignment: center). Complete text within the table cells has to be entered in next form (paragraph - spacing: before/after 0 pt, line spacing: single). In case when table breaks on next page, broken part of the table on next page has to be accompanied by a table header.

Table 5. The distribution cost of packaged goods from Subotica to retail-store objects

Indicators	Period			Total
	Month 1	**Month 2**	**Month 3**	
Distance crossed (km)	12.926	11.295	13.208	37.429
Fuel consumption (litre)	3.231	2.823	3.302	9.356
Value of fuel consumption (RSD)	242.378	211.790	247.653	701.821
Total time spend on touring (hour)	314	266	417	997
Value of total time spend on touring (RSD)	47.048	39.890	62.570	149.508
Number of tours	98	77	102	277
Toll value (RSD)	0	0	0	0
Number of pallets transported (piece)	1.179	976	1358	3.513
Total weight transported (kg)	602.600	429.225	711.116	1.742.941
Vehicle maintenance costs (RSD)	203.858	164.970	224.806	593.634
Lease costs (RSD)	480.938	454.214	565.784	1.500.936
Total sum (RSD)	974.222	870.864	1.100.813	2.945.899

Source: Petrović, 2012;
Note: Values within the table are calculated without Value Added Tax (VAT)

Graphs, dendrograms, diagrams, schemes and pictures should be entered within the text of article (do not use option Float over text) and numerated according to order of their appearance. Their titles have to be positioned immediately above the graph, dendrogram, diagram, scheme or picture to which they relate. Please, have in mind that all titles, sources and notes have to be written by identical style which was used for tables formatting. During the article writing please mark in the main text all calls to a certain graph, dendrogram, diagram, scheme or picture (*Graph 2.*). All graphs, dendrograms, diagrams, schemes and pictures within the paper have to fit the specified format of the page, as well as they have been centrally positioned. Photos and images are not desirable in the paper, but if they can not be avoided, please use an optimal resolution (low resolution can bring to pixelization and worn edges, while to high resolution only increase file size without any contribution to article readability).

During the writing of the article conclusion, please have in mind that **Conclusion** can provide a concise overview of the main results of the article. Do not repeat parts of Summary in this place. Conclusion can explain the importance of article, or it can give recommendations for further action, or it can suggest further work on exposed theme.

Literature has to be set at the end of article (for authors from Serbia before summary in Serbian language), in alphabetical order, according to the author's surname. *All references should be cited in original language (in the language on which are published before), in the volume in which are used within the manuscript preparation.* Literature units have to be written in font TNR, font size 11, alignment Justified, with mutual interspace of 3 pt - before/after. In all literature units only surnames are written as a whole, while all authors' names has to be shorten on to initial (initials have to be set after surnames). Please, write surnames of all authors (do not use the style Petrović et al.). Do not combine literature units (under each ordinal number can be only one literature unit) and always write complete titles of used literature units. If used/cited literature was taken over from the internet publication, after adequate writing of literature unit, in brackets has to be noted complete link from which material was taken over (available at: www.petarpetrovic.pdf). Please follow the presented examples for the proper writing of different types of literature units.

Literature

1. Marković, A. (year): *Title of the Book,* Publisher, City of Publisher, Country of Publisher.
2. Petrović, P., Mirković, M. (year): *Title of the book chapter*, in Book – title of the book, ch. no. x, pp. xxx–xxx, Publisher, City of Publisher, Country of Publisher.
3. Petrović, P., Mirković, M., Marković, A. (year): *Title of the paper*, Title of Journal, vol. x, no. x, pp. xxx-xxx, Publisher, City of Publisher, Country of Publisher, (available at: www.petarpetrovic.pdf).
4. Petrović, P., Mirković, M. (year): *Title of the conference paper/presentation*, Proceedings from the conference - Title of the conference, City, Country, vol. xx, pp. xx-xx.
5. Marković, A. (or name/abbreviation of the Institution/company, for example FAO/UN/IAE) (year): *Title of report/yearbook*, no. of report xxx, City and Country of publisher/institution/company, (available at: www.fao.org/pdf).
6. Petrović, P., Mirković, M. (date): *Title of the newspaper article*, Newspaper title, City, Country, no. xx, (available at: www.politika. com/nauka/20%/srbija).
7. Petrović, P. (year): *Title of Ph.D. dissertation*, Ph.D. dissertation, Name of Faculty, Name of University, City, Country.
8. Marković, A. (or name/abbreviation of the Institution/company that develop patent, for example Faculty of Agriculture/IAE) (year): *Title of the patent*, Name of the institution that was registered patent, reg. no. of patent x xxx xxx, City, Country.
9. *Title of the Law/regulation*, Official Gazette, Country, no. and year.
10. *Title of Standard*, Standard no. xxx, standard developer, year, City, Country.

DETALJNO UPUTSTVO AUTORIMA I ŠABLON ZA RADOVE KOJI SE OBJAVLJUJU U ČASOPISU EKONOMIKA POLJOPRIVREDE

EKONOMIKA POLJOPRIVREDE je međunarodni naučni časopis, koji kvartalno publikuje Naučno društvo agrarnih ekonomista Balkana (NDAEB) u saradnji sa Institutom za ekonomiku poljoprivrede iz Beograd (IEP) i Univerzitetom ekonomskih nauka iz Bukurešta (ASE). U časopisu se publikuju originalni naučni radovi (dvaputa recenzirani), pregledni članci, prethodna saopštenja, prikazi knjiga, kratki osvrti i izveštaji istraživanja. Izveštaji istraživanja i prikazi knjiga se prihvataju nakon prethodne konsultacije/poziva od strane urednika časopisa, ili urednika prikaza knjige, usklađeni sa ktiterijumima podnošenja radova.

Časopis EKONOMIKA POLJOPRIVREDE prihvata samo radove na engleskom jeziku, podnešene E-mejlom (kao attachment) na adresu: economicsofagriculture@ ea.bg.ac.rs i epoljoprivrede@gmail.com

Radovi se dostavljaju u duplikatu, s tim da se na jednom primerku uklonjeni podaci o autorima, kako se ne bi narušio proces anonimnosti recenzije. U drugom primerku rada navode se sve informacije o autorima (u zahtevanom obliku) neophodne za dalju korespodenciju i punu transparentnost publikovanog rada.

Radovi koji se dostavljaju časopisu EKONOMIKA POLJOPRIVREDE moraju posedovati sadržaj istraživanja koja prethodno nisu publikovana na engleskom ili nekom drugom jeziku. Takođe, podnešeni radovi ne smeju biti u procesu razmatranja za publikovanje u nekom drugom časopisu, te njihova publikacija mora biti odobrena od strane svih autora potpisanom izjavom. Izdavač zadržava pravo provere originalnosti dostavljenog rada specijalizovanim softverom za otkrivanje plagijata.

PROCES RECENZIJE

Radovi podnešeni časopisu EKONOMIKA POLJOPRIVREDE podležu duploj anonimnoj (double-blind) recenziji i moraju imati obe pozitivne recenzije usaglašene sa opšteprihvaćenim naučnim standardima. Recenzent samostalno i anonimno ocenjuje rukopis, te može dati pozitivnu recenziju, predlog dorade rada, ili negativnu recenziju. U slučaju antagonističnih recenzija (jedna je pozitivna, a druga negativna) konačna odluka se donosi na osnovu treće recenzije. Rad vraćen autorima na ispravku ne garantuje njegovo objavljivanje po urađenim korekcijama. Konačna odluka o publikovanju će biti donešena nakon ponovljenog procesa recenzije rukopisa. Ukoliko je rad pozitivno ocenjen i prihvaćen za publikovanje, svaki od autora mora potpisati garanciju originalnosti rada i odobrenje za prenos autorskih prava na časopis EKONOMIKA POLJOPRIVREDE.

PRAVILA TEHNIČKE PRIPREME RADOVA

Ovo uputstvo za autore daje sve neophodne informacije, kao i šablon za pripremu radova pre podnošenja za publikovanje u časopisu Ekonomika poljoprivrede. Molimo Vas da maksimalno pažljivo pristupite korišćenju ovog dokumenta, odnosno da ga shvatite kao skup uputstava i praktičan primer koji u mnogome doprinosi lakšoj i efikasnijoj manipulaciji nad Vašim radom u svim fazama uređivanja časopisa. Radovi koji odstupaju od datog šablona se neće uzimati u razmatranje.

Format strane (paper size): *Width* 170 mm x *Height* 240 mm; **Margine**: gore/dole 20 mm, levo/desno 18 mm; **Layout:** *Header* 1,25cm, *Footer* 1,25cm; **Orientation:** Portrait. Preferira se **obim radova** do maksimalnih 30.000 karaktera (bez razmaka), odnosno 15 stranica. Radovi ne bi trebalo da budu kraći od 10 stranica. U zavisnosti od kvaliteta rada Uredništvo može prihvatiti i duže radove. Molimo Vas da radove pripremate na računaru u programu **Microsoft Word XP** ili nekoj kasnijoj verziji ovog programa.

U nastavku sledi detaljan **Šablon** (tehničko uputstvo) za pravilnu pripremu radova za časopis Ekonomika poljoprivrede. Molimo Vas da maksimalno moguće poštujete tehnička pravila data sledećim šablonom.

ŠABLON: NASLOV RADA (CENTRIRAN, TNR SIZE 12, BOLD, SVA SLOVA VELIKA, MAKSIMALNO DVA REDA)[1]

Anđela Marković[2], Petar Petrović[3], Mirko Mirković[4]

Summary

Poželjno je da rezime sadrži do 150 reči, te da sadrži sve bitne činjenice rada, poput cilja rada, korišćene metode, najvažnijih rezultata i osnovnih zaključaka autora.

Tokom pisanja rezimea treba koristiti slova Times New Roman (TNR), veličina fonta (font size) 11, Italic, ravnanje teksta Justify, a tekst rezimea pisati bez proreda (Line Spacing Single), sa razmakom od 6 pt između pasusa, bez uvlačenja prvog reda.

Izbegavajte korišćenje indeksa i specijalnih simbola u apstraktu, odnosno definišite sve skraćenice u apstraktu kada se prvi put upotrebe. Nemojte citirati reference u apstraktu.

Autori iz Srbije šalju naslov rada, rezime rada, ključne reči i podatke o sebi i na srpskom jeziku na kraju rada, ispod listinga korišćene literature. Tekst srpske i engleske verzije apstrakta i ključnih reči se moraju podudarati u svakom pogledu.

Key words: *navesti, maksimalno, pet, ključnih, reči.*

JEL: *Q16, M24* (www.aeaweb.org/jel/jel_class_system.php)

---

2   Anđela Marković, Ph.D., Principal Research Fellow, Institute of Agricultural Economics, Volgina Street no. 15, 11060 Belgrade, Serbia, Phone: +381 11 444 444/int 112, E-mail: andjela.markovic@iep.bg.ac.rs

3   Petar Petrović, Ph.D., Full Professor, University of Belgrade, Faculty of Agriculture, Nemanjina Street no. 6, 11080 Zemun, Serbia, Phone: +381 11 222 222, E-mail: petar.petrovic@gmail.com

4   Mirko Mirković, M.A., Assistant, University in Belgrade, Faculty of Forestry, Kneza Viseslava Street no. 1, 11000 Belgrade, Serbia, Phone: +381 64 33 33 333, E-mail: mirko.mirkovic@yahoo.com

Introduction

Molimo Vas da striktno poštujete uputstva o formatiranju i stilove date u ovom šablonu. Ne menjajte veličinu fonta ili razmak redova da biste ubacili više teksta u uslovno ograničeni broj stranica.

Uredništvo organizuje proces recenziranja pristiglih radova i vrši odabir radova za publikovanje na osnovu urađenih recenzija, odnosno procenjenog kvaliteta radova od strane imenovanih recezenata. Međutim, krajnja odgovornost za poglede, originalnost i tvrdnje iznete u radovima počiva isključivo na autorima rada.

Molimo Vas da poštujete osnovna načela strukturiranja naučnih radova, odnosno trudite se koliko je to moguće da Vaš rad ima sledeće segmente: Uvod, Cilja rada i korišćena metodologija, Rezultati rada sa diskusijom, Zaključak, Literatura.

Tokom pisanja rada treba koristiti slova **Times New Roman (TNR)**, veličina fonta **(font size) 11**, ravnanje teksta **Justify**, a tekst rada pisati bez proreda (**Line Spacing Single**), sa razmakom od **6 pt između pasusa**, **bez uvlačenja prvog reda**. Radovi se pišu isključivo na engleskom jeziku. Preporučljivo je rad pisati u trećem licu jednine ili množine uz korišćenje aktivnog oblika. Pre slanja rada, obavezno proveriti pravopisne greške putem spellchecker-a za engleski jezik.

Podnaslovi se pišu fontom **Times New Roman**, veličina fonta (**font size**) **11**, **bold**, **centrirano**, samo prvo slovo veliko, razmak podnaslova i teksta iznad 12 pt (**before 12 pt**), a razmak podnaslova i teksta ispod 6 pt (**after 6 pt**). Molimo Vas koristiti prikazani stil pisanja u ovom šablonu.

Molimo Vas da definišete **skraćenice i akronime** prilikom prvog pojavljivanja u tekstu rada, čak i u slučaju da su već bili definisani u apstraktu rada. Ne koristite skraćenice u naslovu rada osim ukoliko se one apsolutno ne mogu izbeći

Radi unosa **jednačina i formula** u rad, koristite Microsoft Equation Editor ili dodatak za pisanje jednačina MathType (www.mathtype.com). Ne preporučuje se korišćenje ugrađenog editor jednačina iz programa Word 2007. Proverite da li ste definisali sve simbole u jednačini (neposredno posle jednačine).

Reference (autori citata) se navode direktno u tekstu rada u sledećem obliku (Petrović, 2012; ili Petrović, Marković, 2012; ili Mirković et al., 2012). Ne navodite ih kao indekse u četvrtastoj zagradi [3] ili u fusnoti. Trudite se da fusnotu koristite samo u slučaju bližih objašnjenja određenih pojmova, odnosno razjašnjenja realnih ili hipotetičkih situacija. Nemojte vršiti numeraciju stranica.

Tabele moraju biti formirane u tekstu rada, a ne preuzete u formi slika iz drugih materijala. Tabele unositi u sam tekst rada i numerisati ih prema redosledu njihovog pojavljivanja. Nazivi tabela moraju biti dati neposredno iznad tabele na koju se odnose. Koristite dole prikazani stil tokom njihovog formatiranja. Naslov tabela pisati sa razmakom 6 pt – iznad/before i 3pt – ispod/after, u fontu TNR, font size 11, ravnanje Justified. Tekst unutar tabela pisati fontom TNR, font size 9. Tekst u zaglavlju tabela boldirati. Izvor i potencijalne napomene pisati sa razmakom 3 pt ispod tabela (before). Izvore i napomene pisati u fontu TNR, font size 10,

ravnanje Justified. Naredni pasus početi na razmaku od 6pt od izvora tabele ili napomene (after). Tokom pisanja rada u originalnom tekstu treba markirati poziv na određenu tabelu (*Table 5.*). Trudite se da se sve tabele u radu veličinom uklapaju u zadati format strane (Table properties – preferred width – max 97% - alignment: center). Sav tekst u poljima tabele treba unositi u formi (paragraph – spacing: before/after 0pt, line spacing: single). U slučaju da se tabela lomi na narednu stranicu, molimo Vas da prelomljeni deo tabele na narednoj stranici bude propraćen zaglavljem tabele.

Table 5. The distribution cost of packaged goods from Subotica to retail-store objects

Indicators	Period			Total
	Month 1	Month 2	Month 3	
Distance crossed (km)	12.926	11.295	13.208	37.429
Fuel consumption (litre)	3.231	2.823	3.302	9.356
Value of fuel consumption (RSD)	242.378	211.790	247.653	701.821
Total time spend on touring (hour)	314	266	417	997
Value of total time spend on touring (RSD)	47.048	39.890	62.570	149.508
Number of tours	98	77	102	277
Toll value (RSD)	0	0	0	0
Number of pallets transported (piece)	1.179	976	1358	3.513
Total weight transported (kg)	602.600	429.225	711.116	1.742.941
Vehicle maintenance costs (RSD)	203.858	164.970	224.806	593.634
Lease costs (RSD)	480.938	454.214	565.784	1.500.936
Total sum (RSD)	974.222	870.864	1.100.813	2.945.899

Source: Petrović, 2012;
Note: Values within the table are calculated without Value Added Tax (VAT)

Grafike, dendrograme, dijagrame, šeme i slike treba unositi u sam tekst rada (ne koristiti opciju Float over text) i numerisati ih prema redosledu njihovog pojavljivanja. Njihovi nazivi se moraju pozicionirati neposredno iznad grafika, dendrograma, dijagrama, šeme ili slike na koju se odnose. Kod navođenja naslova, izvora i napomena koristiti isti stil koji je predhodno prikazan za formiranje tabela. Tokom pisanja rada u originalnom tekstu treba markirati pozive na određeni grafik, dendrogram, dijagram, šemu ili sliku (*Graph 2.*). Svi grafici, dendrogrami, dijagrami, šeme i slike u radu se svojom veličinom moraju uklapati u zadati format strane, te moraju biti centralno postavljeni. Fotografije nisu poželjne u predmetnom radu, a ukoliko se one ne mogu izbeći molimo Vas da koristite optimalnu rezoluciju (preniska rezolucija dovodi do pikselacije i krzavih ivica, dok previsoka samo povećava veličinu fajla bez doprinosa čitljivosti rada).

Kod pisanja zaključka rada, molimo Vas imajte na umu da iako **Zaključak** može dati sažeti pregled glavnih rezultata rada, nemojte ponavljati apstrakt na ovome mestu. Zaključak može objasniti značaj rada, dati preporuke za dalje delovanje ili predložiti dalji rad na obrađivanoj temi.

Literatura se navodi na kraju rada (kod autora iz Srbije pre rezimea na srpskom jeziku), abecednim redom, prema prezimenu autora. ***Molimo Vas da reference navodite u originalu (na jeziku na kome su objavljene) u obimu u kom su korišćene/citirane tokom pisanja***

rada. Literaturu navoditi u fontu TNR, font size 11, ravnanje Justified, sa međusobnim razmakom 3pt – iznad/before i 3pt – ispod/after. U svim literaturnim jedinicama samo se prezimena daju u punom obimu, dok se sva imena autora skraćuju na inicijal i stavljaju posle prezimena. Molimo Vas da navodite prezimena svih autora, a ne da koristite stil navođenja Petrović et al. Nemojte kombinovati literaturne jedinice (pod jednim rednim brojem može biti samo jedna referenca) i uvek pišite pune naslove u radu korišćenih literaturnih jedinica. Ukoliko je korišćena/citirana literatura preuzeta iz internet publikacija, posle pravilno izvršenog imenovanja literaturne jedinice u zagradi se mora navesti kompletan link sa koga je materijal preuzet (available at: www.petarpetrovic.pdf). Molimo Vas pridržavajte se dole navedenih primera navođenja različitih tipova literaturnih jedinica i referenci.

Literature

1. Marković, A. (godina izdanja): *Naslov knjige,* Izdavač, Mesto i Zemlja izdavača.

2. Petrović, P., Mirković, M. (godina izdanja): *Naslov poglavlja u knjizi*, u knjizi – Naslov knjige, ch. br. x, str. xxx–xxx, Izdavač, Mesto i Zemlja izdavača.

3. Petrović, P., Mirković, M., Marković, A. (godina izdanja): *Naslov rada*, Časopis, vol. x, br. x, str. xxx-xxx, Izdavač, Mesto i Zemlja izdavača, (dostupno na: www. petarpetrovic.pdf).

4. Petrović, P., Mirković, M. (godina izdanja): *Naslov konferencijskog rada/prezentacije*, Zbornik radova sa konferencije – Naziv konferencije, Mesto, Zemlja, vol. xx, str. xx-xx.

5. Marković, A. (ili ime/skraćenica Institutcije/Kompanije, na primer FAO/United Nations/ IEP) (godina izdanja): *Naslov izveštaja/godišnjaka,* br. izveštaja xxx, Mesto i Zemlja izdavača/institucije/kompanije, (dostupno na: www.fao.org/pdf).

6. Petrović, P., Mirković, M. (godina izdanja): *Naslov novinskog članka*, Naziv novina, Mesto, Zemlja, br. xx, (dostupno na: www.politika. com/nauka/20%/srbija).

7. Petrović, P. (godina izdanja): *Naslov doktorske disertacije*, doktorska disertacija, Fakultet, Univerzitet, Mesto, Zemlja.

8. Marković, A. (ili ime/skraćenica Institucije/Kompanije koja je razvila patent, na primer Poljoprivredni fakultet/IEP) (godina registracije patenta): *Naziv patenta*, Institucija koja je registrovala patent, reg. br. patenta - x xxx xxx, Mesto, Zemlja.

9. *Naziv zakona/uredbe*, Službeni glasnik, Zemlja, br. i godina izdanja.

10. *Naziv standarda*, Standard br. xxx, izdavač standarda, godina izdanja, Mesto, Zemlja.

Notes:

Published quarterly

Journal is registered in major scientific databases:

- EBSCO,
- AgEcon Search,
- Social Science Research Network (SSRN),
- ProQuest,
- Ulrich's Periodicals Directory,
- CABI,
- J-Gate,
- The World Wide Web Virtual Library for European Integration,
- SCIndeks,
- EconLit

Journal is indexed in major scientific databases:

- Index Copernicus Journals Master List (ICV2013: 5,22).