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CONTENT

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VISITORS' MOTIVES FOR ATTENDING A HYBRID EVENT: A CASE STUDY OF AGRICULTURAL FAIR

Milan Ivkov[1], Ivana Blešić[2], Jovanka Popov Raljić[3], Anđelija Ivkov Džigurski[4], Tatjana Pivac[5], Tamara Jovanović[6]

Summary

Management of a complex events such as hybrid ones, relies on understanding a modern market trends. The purpose of this study is to determine visitors' motives for attending a hybrid event, to identify clusters based on those motives, and to help organizers and exhibitors to meet visitors' expectations. Therefore, authors performed ANOVA analysis, factor analysis and hierarchical cluster analysis. The findings clearly indicate elements of trade fairs and consumer exhibitions integrated in hybrid event and therefore, some of the main motives for visiting those two types of events are also present among hybrid event visitors. However, hybrid event tends to be more than just place for business meetings. It is also a venue for education and leisure time activities. Moreover, event organizers and exhibitors need to pay more attention on their strategic approach to managing their event activities. The paper suggests that hybrid event organizers should focus on establishing dialogue with both exhibitors and visitors.

Key words: *hybrid event, visitors' motives, consumer exhibition, trade fair.*

JEL: *Q13, G14, D84, L21*

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Introduction

Dynamic development of the market initiated fast growth of the event industry, and driven with constantly rising consumer needs, events have reached their blossom era in terms of variety and socio-economic importance. The impact of events can result in positive and negative direction, where the negative impacts and the unequal distribution of benefits are less commonly explored (Hiller, 1998).

Probably the most important impact is on tourism, especially if considered as its development tool. Exhibitions, fairs, festivals and all events in general, provide benefits for the local community visible before the event takes place, during the event and afterwards. Exhibitions boost positive impacts and share them throughout social, economic, cultural and even political dimensions. Due to this, events have become one of the fastest growing types of tourism attractions (Crompton, McKay, 1997; Getz, 1997; Thrane, 2002). Since the events have such a significant role in the local community, motives that attract visitors are interesting area for research. As long as we treat an event as a service or product, motives can be described as a link between the urge to satisfy the need and decision trigger. Many authors consider tourists' motives as multiple (Crompton, 1979; Pearce, 1982; Mansfeld, 1992; Uysal et al., 1993) which applies to hybrid event visitors in certain manner. Led by different motives, these events are visited by representatives of non-exhibiting companies, professional visitors, government and embassy delegates, various buyers and sellers and the general public. Event organizers put their efforts in attracting all groups of visitors offering them a wide range of services and emphasizing benefits arising from the visit.

The International Agriculture Fair in Novi Sad (Serbia) represents a multi-dimensional event recognized worldwide. It has grown into a leading event of this kind in the region positioning itself high among other similar events. As it has been the case so far, tourist organizations and sport associations traditionally participate in this event as well as sellers of consumer goods. Despite its main agricultural theme, the fair is recognized among the general public as a unique place for spending spare time. Professional lectures, round table sessions, workshops and other supporting activities organized at the Congress centre of the Novi Sad Fair add extra quality to this event.

To the authors' knowledge no previously published research has been statistically examined in terms of visitors' motives of visiting hybrid event of this kind.

This study focuses on visitors' main motivations for visiting the hybrid event and segmenting them in relation to their motives. The paper should identify major motives of visitor and help organizers and other stakeholders in creation of enhanced and successful exhibitions.

After the introduction as the first part of the manuscript, the paper explores published literature related to events, visitors' motives, and role of exhibition organizers and presents proposed hypotheses. Third part of the paper offers the insight of used methodology and sample characteristics. The following, fourth section of the paper presents the research

results and authors' discussion. The last, fifth part of the paper deals with concluding thoughts with emphasis on practical implications, limitations of the study and suggestions for future research.

Literature review and hypotheses

Events

Together with the civilization development, events found their way to the frame of organized society. We can say that all today's events date back to that ancient period but their significance is nowadays much higher and multiple. Human society went through many different phases in history resulting in changes of consumers' behavior and visitors' decision making process, emerging new interests and increase of leisure time activities diversification. The great abundance of existing events requires a systematic approach to the selection process. Visitors have a task to recognize potential attractions and to decide which one to visit. Since many of the event organizers are faced with severe competition, strategies on how to attract visitors are crucial. In terms of financial income, visitors play another important role.

While the economic impact of the events is mainly significant to the local community, other benefits are of high importance for the country in general. A great part of world literature focuses on mentioned economic benefits but many authors (for example, Carlsen, Taylor 2003; Fredline et al., 2003) suggest more research is needed on the social, physical, environmental and tourism impacts of events and their interrelationships.

Rittichainuwat and Mair (2012) state that exhibitions can be subdivided into three categories: trade shows, consumer exhibitions and a hybrid category which combines two previously mentioned. Trade shows are described as open only to business/professional visitors and media representatives (Browning, Adams, 1988). Consumer exhibitions are open to the public and they allow direct sell-buy actions between exhibitors and consumers (Rittichainuwat, Mair, 2012). Following this classification, International Agriculture Fair belongs to the group of hybrid exhibitions. In order to better understand this event Table 1 shows its profile. Such exhibition complexity could be described as the response to market trends and to a growing interest and recognition of its value in terms of economy, society, culture and tourism.

Not only exhibitions attract visitors but also companies looking for a chance to extend their businesses. It is a unique opportunity to meet all significant stakeholders in one place, get more information on competition activities, to identify potential emerging trends and estimate further actions. From personal experience in organizing this and many other similar exhibitions, authors find these events as a very powerful tool in positioning the company on the market and creating a brand image. Another advantage of this marketing strategy is a direct contact between exhibiting companies and visitors, buyers and dealers which allows quick comparisons of products (Reeder et al., 1991) and effective interaction between exhibitors and visitors through many activities (Kozak, 2006; Pearce, 2007; Getz, 2008). From the visitors' point of view, Dwyer and Tanner (1999) state that this is an opportunity to obtain information from many vendors at one place. Fairs are places where exhibitors often present new product or services for the first time. This means visitors are able to see them,

test them and to buy them usually at discount prices. Most of the sales made at the exhibition are direct (B2B or B2C).

Since the benefits of being present at such exhibition are numerous, competition among companies is constantly increasing (Gomez et al., 1992). Those benefits attract both exhibitors and visitors.

Table 1. Event profile

Main exhibitor commodity groups	Supporting activities
Agriculture machinery	Seminars, workshops, etc.
Seed material	Horse riding tournaments
Chemical industry products	Thematic days (Day of cattle breeders, etc.)
Livestock	Quality appraisal
Animal feed	Pets exhibition
Food and drink	Lottery/raffle
Food processing equipment	Strongman Champions League (2011)
Other	Other

Source: Authors' research

Visitors' motives

Benefits discussed in literature are: collecting information about new products (Rosson, Serinhaus, 1995); collecting information for future purchases (Munuera, Ruiz, 1999); comparing brands (Tanner et al., 2001); assessing new products and developments, obtaining product and technical information, meeting and comparing potential suppliers and gaining new ideas (Dudley, 1990). On the other hand, when deciding whether or not to visit an exhibition, potential visitors are concerned about the information they expect to find about products, services and companies (Blythe, 2002). Depending on the type of visitor, exhibitions can be considered as interactive business network - much more than selling/buying or communication tool (Bello, 1992; Bello, Lohita 1993; Rosson, Serinhaus, 1995; Ling Yee, 2007), and as an environment where business partners and suppliers can be evaluated (Sharland, Balgoh, 1996). Researching visitors' motivations in attending consumer exhibitions Rittichainuwat and Mair (2012) find "Get discounts and special promotions" as the major motivation. They also find the examination of products before making decision, collection of information for future purchases and buying products and services to be among top attendance motives. Authors generally agree about the difficulties in researching attendance motivations and mainly consider an event as trade fair, trade show or consumer exhibition. Therefore, motivations are grouped in relation to the type of visitors. The biggest difference in motivations is between trade show visitors and consumer exhibition visitors. In other words, that difference divides visitors into two main categories: buyers and non-buyers including several subcategories: business (those whose aim is to get in direct contact with exhibiting companies and discuss cooperation possibilities), professional (mainly attending seminars, workshops and press visitors), and the general public (those who simply want to spend a day exploring the exhibition with friends and family as a part of leisure, cultural and educational activities). Some authors find in their studies that trade show visitors are mainly non-buyers and not interested in any purchase (Kepf, Smith, 1998; Borghini et al., 2006), while

some authors identify trade show visitors as buyers: short-term buyers, long-term buyers, prospective buyers, current buyers and non-buyers (Godar, 1992; Godar, O'Connor 2001). Furthermore, Tanner et al. (2001) in their study classify trade show visitors as total visitors (those who consider both purchase and non-purchase activities important and also plan to buy a product or service during the fair or after it), self-developers (whose aim is networking and seminars attendance in order to develop their career), shoppers and browsers. In their study, Lee et al. (2010) suggest that visitors can be divided into three major categories by their non-buying motivations: seeing a particular product or companies, gathering information and building their networks. Among those visitors who primarily attend the exhibition with non-purchase motives Borghini et al. (2006) identifies suppliers, competitors and representatives of companies in related field.

Do we have the same motives? Exhibitors vs. visitors

Trade fairs are generally seen as a "must show up" place where exhibitors focus on achieving sales objectives. By Blythe and Rayner (1996) those objectives are: generating leads, closing sales and making new contacts with buyers. As mentioned in previous paragraphs, not every visitor is also a buyer and therefore sales-only-oriented exhibit could lead to dissatisfaction and not meeting both exhibitors' and visitors' expectations. Many studies reveal unawareness of exhibitors about this fact (Bello, Lohita, 1993; Gramman, 1993; Blythe, Rayner, 1996; Munuera, Ruiz, 1999; Skerlos, Blythe, 2000) which could be a consequence of the gap between motives of the two parties. Exhibitors simply have to deal with visitors with totally different motives and to find a strategy to isolate their focus group of visitors. Blythe (2010) presents those visitors as: *Tyre kickers* (those with no intention of buying and no power to do so), *Wheeler-dealers* (those who have the power to buy but want to negotiate in first place and to search for the best offer), *Technocrats* (those who are looking for technology innovations), *Foxes* (those with motives to sell something to exhibitors) and *Day-trippers* (usually retired people, students, families and others who see an exhibition as a nice opportunity to spend a day out and find some entertainment). In simple terms, exhibitors need to focus on a small group of visitors accounting for 10 per cent or less (Bello, Lohita, 1993; Gramman, 1993; Munuera, Ruiz, 1999; Skerlos, Blythe, 2000). Blythe (2002) adds that exhibitors are ignoring the possibilities arising from interaction with the other 90 per cent of visitors. In addition to those findings, Tanner et al. (2001) state that non-buyers should not be underestimated since they may become long-term buyers. Previous studies show that exhibitors at trade fairs can have more objectives such as: sales, promotion, market research and strategic benefit related activities (Blythe, 1997; Tanner, 2002; Hansen, 2004). Apart from these objectives one of the main goals is certainly extending business network. In other words, those exhibitors who decided to participate in the trade fair or any similar exhibition due to various motives are more likely to provide a better response to visitors' needs, fulfil both own and visitor's expectations and to meet required satisfaction level.

New motives can arise after the first attendance or participation in the exhibition or from the experiences of other visitors. Visitors therefore can have different motives for attending the same or similar event. By changing or extending the motives and priorities visitors move from one to another previously classified groups. In some cases they simply fit to more than just

one group. The same theory could be applicable in regards to exhibitors. Profile of exhibitors and quality and quantity of visitors can initiate the change of motivation. On the other hand, positive visit or exhibit outcome can initiate repeat participation.

Table 2. Previous researches on similar events

Author(s)	Event profile	Identified attendance motives
Breiter, Milman (2006)	US exhibitions	Networking, learning about new products, viewing the quality of the exhibition
Whitfield, Webber (2011)	UK exhibition	Meeting specialists, networking, finding out about new products, gaining technical advice
Kozak (2006)	Travel and hospitality exhibitions	Learning about new products, gathering information about new products and companies, seeing particular products and companies
Lee et al. (2010)	Trade show	Market investigation, products comparison, testing/trying products, information search
Kozak, Kayr (2009)	Trade show: Tourism and travel exhibition	Shopping and meeting new friends are the least important
Tanner et al. (2001)	Trade show	Purchasing, career development, attending seminars, finding about new products and industry developments
Borghini et al. (2006)	Trade show	Verifying competitiveness of own products, collecting market intelligence, being up to date with market trends
Blythe (1999)	Trade exhibition	Seeing new products and developments, obtaining technical or product information, getting up-to-date information on legislation, trying new products, seeing new products and companies, making business contacts, talking to experts, comparing products
Godar, O'Connor (2001)	Buyer trade show	Short term: confirming decision, becoming advocate, receiving reward; Long term: reinforcing contacts, developing contacts, supporting industry
Munuera, Ruiz (1999)	Trade fair	Buying exhibited products, contacting suppliers, seeking new ideas, finding out about competitors, discovering new products and obtaining information, meeting specialists and comparing prices
Rittichainuwat, Mair (2012)	Consumer travel exhibition	Getting discounts and special promotions, examining products, collecting information for future purchase, buying products and services, gaining knowledge about new products, learning about new trends

Source: Authors' research

The role of the exhibition organizers in meeting the participants' objectives

Hybrid exhibitions are the meeting point of people from different walks of life. These people can have different motives for attending an exhibition. The objective of exhibition organizers is to create highly effective shows that result in positive outcomes for both exhibitors and visitors. Some might come to the exhibitions strictly for business purposes and others might only be interested in leisure activities. Whatever may be the reason for their visit, visitors are always on the lookout for something interesting and worth remembering. Therefore, the setting which allows matching predefined objectives with the achieved objectives of the visitors should be one of the organizers' priorities. If a predefined objective has been achieved, from visitor's point of view the exhibition is considered as successful. Organizers are aware of the fact that a friendly atmosphere can lead to higher effectiveness of the event and in relation to that many initiatives are undertaken. Creating effective and enjoyable event for all attendees, both exhibitors and visitors, organizers contribute in meeting their

predefined expectations. Organizers can affect quantity and quality of exhibition attendance directly and indirectly. Exhibition location and entrance fees are mainly dependent on the organizer's market research and estimation. Tanner et al. (2001) also see those variables as certain barriers to visitors' attendance. The media represents another powerful tool that organizers frequently use to promote the events, draw exhibitors' and visitors' attention and create new motives for attendance.

Hypotheses

Based on these theoretical foundations and empirical studies, this paper proposed the following hypotheses:

Hypothesis 1. Motivation for visiting hybrid event differs among different groups of visitors.

Hypothesis 1a. Purchasing is a motive for hybrid event attendance.

Hypothesis 1b. Collecting information about new products, services and offers are motives for hybrid event attendance.

Hypothesis 1c. Attending seminars, meeting experts and finding business partners are motives for hybrid event attendance.

Hypothesis 1d. Leisure activities are motives for hybrid event attendance.

Hypothesis 2. Multiple clusters can be identified based on respondents' motive of the visit.

On the basis of the above literature review, main motives for visiting a trade show are buying, collecting information and business networking (Munuera, Ruiz, 1999; Borghini et al., 2006; Tanner et al., 2001). In the context of consumer exhibitions motivations are following: getting discounts and special promotions, examination of products and information collection (Rittichainuwat, Mair 2012).

Methodology and sample characteristics

Both qualitative and quantitative approach is used. Visitors of the previous exhibitions are surveyed and asked to write a list of their motives which played a main role in exhibition attendance. The major motives listed were: collecting information before the purchase and for future purchases, comparing products, buying, finding business partners, attending seminars, leisure activities. According to the literature review additional motives were found to have influence in visitors' participation in the exhibition and were included in the questionnaire. Motives are also compared to those found by Rittichainuwat and Mair (2012) in their study about consumer exhibition. By this comparison we found that many motives are overlapping, their position on the priority list is different though. Those findings are expected since this event is described as hybrid one which consolidates trade show, consumer exhibition, congress, sport and leisure activities in one event. Therefore, questions were slightly adapted to correspond to the exhibition theme. The final version of questionnaire was administered after consulting with exhibition organizers, congress centre managers and people from tourist organization had been done.

The questionnaire was split into three sections: demographic profile of visitors, previous experience in relation to the visiting exhibition and list of motives. Five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used to measure level of visitors' agreement with the statements. The survey was conducted at the 81st International Agriculture Fair in May 2014. This exhibition is organized every year in May by Novi Sad Fair – professional exhibition and congress centre.

Visitors were surveyed in all areas of the fairground and in halls, especially in the main entrance hall when waiting to buy a ticket or when leaving. This provided a sample of attendees interested in buying machinery, livestock and other products and services, finding business partners, attending seminars, and in leisure activities.

The acquired data was processed with SPSS 17.0 software, using descriptive statistics, ANOVA analysis, factor analysis and hierarchical cluster analysis.

Table 3. Demographic information of respondents (n=210)

Variables	Sample size	%	Variables	Sample size	%
Age			**Profession**		
≤ 20	6	2.9	Farmer	72	34.3
21 - 30	30	14.3	Entrepreneur	60	28.6
31 - 40	83	39.5	Government service employee	14	6.7
41 - 50	59	28.1	Professor/Expert	6	2.9
51 - 60	28	13.3	Retired person	10	4.8
≥ 61	4	1.9	Student/Pupil	22	10.5
Gender			Unemployed	8	3.8
Male	156	74.3	Press	18	8.6
Female	54	25.7	**First time visitor**		
Education			Yes	4	1.9
High school	72	34.4	No	206	98.1
Faculty	52	24.8	**Do you attend similar events?**		
Mr/MSc	65	30.9	Yes	172	81.9
PhD	21	9.9	No	38	18.1

Source: Authors' calculation based on the survey data

Table 3 shows that the majority of visitors are in the age group of 31 to 50 years. So it is working age population mostly engaged in agriculture or entrepreneurship. Far more men than women visited the fair, which is understandable because agriculture is a demanding activity and does not represent a large sphere of interest among women.

The majority of visitors have a high school degree, and that is directly related to the fact that farmers were the most numerous among the visitors. Unfortunately, this shows that this is the category of the population with the lowest level of education. As one of the main reasons for this phenomena may be mentioned frequent leaving of the young people from villages and difficult economic situation in agriculture in Serbia for many years. Young people seem to be more interested in life in towns than staying in villages. Over 98% of visitors are not at the fair for the first time. Considering that this event has a long tradition and it is one of the

largest events of its kind in the region, this is a unique opportunity to be engaged in some of the activities presented in Table 1. It is encouraging to note that vast majority of visitors also visits other similar events, which shows their active approach to learning and following new trends.

Results and discussion

Reliability and validity analysis

The factor analysis was conducted to verify the construct validity of the questionnaire and Cronbach's α value for each factor was computed to verify the reliability. The factor analysis was based on the principal component analysis with varimax rotation. In this study, all factors with eigenvalue greater than 1 and with factor loadings more than 0.5 were retained. The results of the factor analysis, which suggested a four-factor solution, included 14 items and explained 79.026 per cent of the variance. The Kaiser – Meyer – Olkin (KMO) overall measure of sampling adequacy was 0.795 which was middling (Kaiser, 1974) and Bartlett's test of Sphericity was significant (p = 0.000). The results of the factor analysis produced a clean factor structure with relatively higher loadings on the appropriate factors. Cronbach's α values for each factor were greater than 0.8. The results showed that the Alpha coefficients of the four factors ranged from 0.823 to 0.916. This demonstrates that the scales of the formal questionnaire have considerable reliability (Nunnally, 1978). Table 4 shows the results of the factor analysis.

Table 4. Results of factor analysis

Extracted factors	Items	Factor loading	Eigenvalue	Variance explained	Cronbach's α
F1 - Purchase	Buying livestock, products and services	0.836	4.868	23.170	0.898
	Examining products before purchase	0.914			
	Collecting information for further purchases	0.810			
	Getting discounts and special promotions	0.875			
F2 - Information	Getting acquainted with innovations	0.858	3.717	22.966	0.916
	Learning about new trends in agriculture	0.903			
	Gaining knowledge about new products	0.890			
F3 - Education and Business	Attending seminars and workshops	0.621	1.464	18.186	0.804
	Meeting experts	0.874			
	Exchanging ideas with others	0.802			
	Finding new business partners	0.636			
F4 - Leisure	Watching sports and entertaining programs	0.809	1.016	14.704	0.823
	Valuable prizes for visitors	0.871			
	Leisure activities	0.619			

Source: Authors' calculation based on the survey data

The first factor was labelled *"Purchase"*. This factor explained 23.170% of the total variance with a reliability coefficient of 0.898. The second factor was *"Information"* explaining 22.966 % of the total variance with a reliability coefficient of 0.916. The third factor was labelled *"Education and Business"* and explained 18.186 % of the variance with a reliability coefficient of 0.804. The fourth factor, labelled *"Leisure"* accounted for 14.704% of the variance with a reliability coefficient of 0.823.

The results of descriptive statistical analysis (Table 5) show that visitors gave the highest significance to the first factor *"Purchase"* with mean rating 3.404. Unlike other trade fairs and exhibitions, where main motives are finding business partners and getting discounts and promotions, visitors to International Agriculture Fair put an emphasis on buying. Getting discounts and special promotions is certainly among *"Purchase"* items. However, this item scored the lowest mean rating of 3.286. Next in importance are second and third factors *"Information"* and "*Education and Business*". The lowest rated factor is *"Leisure"* due to small number of visitors who primarily show interest in leisure activities.

Table 5. Mean ratings of factors and items

Extracted factors and items	Mean	Std. Dev.
F1 - Purchase	**3.404**	**1.0535**
Buying livestock, products and services	3.438	1.2173
Examining products before purchase	3.505	1.2149
Collecting information for further purchases	3.390	1.1533
Getting discounts and special promotions	3.286	1.2274
F2 - Information	**3.330**	**0.9286**
Getting acquainted with innovations	3.333	0.9651
Learning about new trends in agriculture	3.343	1.0337
Gaining knowledge about new products	3.314	1.0101
F3 – Education and Business	**3.126**	**0.9345**
Attending seminars and workshops	2.848	1.1473
Meeting experts	3.029	1.1612
Exchanging ideas with others	3.143	1.0017
Finding new business partners	3.486	1.3703
F4 - Leisure	**2.514**	**0.9083**
Watching sports and entertaining programs	2.848	1.1220
Valuable prizes for visitors	2.143	0.8687
Leisure activities	2.552	1.1573

Source: Authors' calculation based on the survey data

When analyzing the data, four factors that are consistent with the hypotheses clearly stood out, or in other words, they confirm the initial assumption. The largest number of visitors belongs to the category of farmers. Therefore, it is understandable that the first factor is shown as the most significant. Within the first factor four items were extracted and one of them is also the most common reason for visiting the fair: Examining products before purchase (3.505).

Table 6. Results of ANOVA analysis

Respondent category	Means by factors			
	F1	F2	F3	F4
1. Farmer	41.076	37.778	34.236	26.759
2. Entrepreneur	31.875	33.556	32.917	19.333
3. Government service employee	25.714	33.810	38.571	17.619
4. Professor/ Expert	20.000	43.333	42.500	12.222
5. Pensioner	32.500	20.000	15.500	41.333
5. Student/ Pupil	33.295	25.152	22.727	31.515
6. Unemployed person	32.361	25.926	25.556	31.481
7. Press people	20.000	38.333	26.875	25.000
F-value	14.235	16.148	18.514	26.436
Scheffe test	1>2,3,4,7	4>5,6,7	4> 5,6,7,8	5> 1,2,3,4,8

Source: Authors' calculation based on the survey data;

Note: $p < 0.01$

Analysis of variance ANOVA (Table 6), compared to profile of visitors, show a statistically significant difference in scores at all factors. The results of post-hoc Scheffe's test show that farmers provide statistically significantly greater importance to the first factor *"Purchase"* compared to the entrepreneurs, government service employees and professors/experts in the field of agriculture and the unemployed visitors. Professors/experts in the field of agriculture give statistically significantly greater importance to *"Information"* factor in comparison to the pensioners, students and unemployed visitors. Furthermore, professors/ experts give higher importance to "*Education and Business*" factor than pensioners, students, unemployed and the press people. Fourth factor, *"Leisure"* was marked as the most important one by pensioners, which makes a significant difference in relation to farmers, entrepreneurs, government service employees, professors/experts in the field of agriculture and the press people.

By using hierarchical cluster analysis (Table 7), the respondents are grouped based on motives of visit. The method of Euclidean squared distance was applied. After the dendrogram analysis two clusters were reta0ined: Cluster 1 (n=104) and Cluster 2 (n=106). Further canonical discriminative analysis (λ=0.355, R=0.803, $p<0.001$) identified the clusters more precisely.

Table 7. Cluster analysis

Groups/factors	Wilks' Lambda	F	Sig.	Structure matrix
				Function 1
Purchase	0.917	18.739	0.000	0.583
Information (Cluster 2)	0.875	29.842	0.000	-0.281
Education and Business	0.945	12.120	0.001	0.223
Leisure (Cluster 1)	0.619	128.271	0.000	0.179

Source: Authors' calculation based on the survey data

The respondents from Cluster 1 can be described as those who visit hybrid event in order to spend leisure time, while the Cluster 2 groups respondents whose primary motive of visit is collecting information.

Regarding the gender, it was found that male population is dominant in both clusters (76.9% and 71.7%, respectively). In terms of age of the respondents, the findings are very similar to general sample characteristics. The majority of the respondents in both clusters are in the age group of 31 to 50 years (53.8% in Cluster 1 and 81.1% in Cluster 2). As mentioned before, working age population is mostly engaged in agriculture or entrepreneurship and these results are somewhat expected – over 80% of the respondents who visited the event in order to collect the information, belong to this age group. It is also noticed a higher percentage of the respondents in groups of 51 to 60 years (21.2%) and over 60 years (3.8%) in Cluster 1 than in the same age groups in Cluster 2 (5.7% and 0%, respectively). It means that elderly people visited the event mainly with leisure motives (e.g. retired people, older farmers).

Further analysis of the respondents' education level from both clusters reveals that the biggest difference is in the number of visitors with PhD degree. Only four visitors (3.8%) are present in Cluster 1, while in Cluster 2 there are 18 (17%) visitors with PhD degree. Highly educated people are more interested in collecting new information and establishing contacts than in leisure activities. It is probably due to their working positions and job specifications. Regarding the respondents' profession, farmers are dominant group in Cluster 1 (50%), followed by entrepreneurs (15.4%). On the other hand, it is vice versa situation in Cluster 2; the most dominant are entrepreneurs (41.5%), and the farmers follow (18.9%). Additionally, government service employees represent only 1.9% share in Cluster 1 and 11.3% in Cluster 2, which can be also linked to their work obligations.

Finally, 98.1% of the respondents from both clusters are not the first time visitors. However, somewhat smaller number of visitors (73.1%) from Cluster 1 visits similar events in comparison to 90.6% of the respondents from Cluster 2. Therefore, it is not surprising that those visitors who primarily collect information also visit similar events.

These research findings indicate that it is possible to accept the initial hypotheses:

H_{1a}: The purchasing is the most important motive for farmers and end users of the exhibited products and services. In this way, they provide themselves the basic funding – machinery, equipment and tools. Buying under favorable conditions and a large selection of products in one place is certainly one of the main reasons why farmers give the most attention to this factor. It is interesting that students and pensioners are next on the list of those who gave significant importance to the first factor. Obviously, those categories of visitors are low budget end users with low purchasing powers, but they are mainly interested in buying cheaper things such as souvenirs, food products, pets, etc.

H_{1b}: The second motive is singled out as very significant for farmers, entrepreneurs, government service employees and press people. It is understandable that the farmers gave high importance to this factor, because gathering information is the phase that usually

precedes purchasing. However, it is interesting that the professors and other experts are those who gave the strongest importance to this factor. This could be attributed to the desire to be up to date with new technical and technological developments and trends in the field of their interest in order to transmit new knowledge through their lectures. Press people, in relation to other factors, put far more importance on gathering information, which is not surprising given the fact that this is the core of their business activities.

H_{1c}: This is also the motive that has received the greatest importance by professors and experts. Considering the fact that apart from education, this factor includes business segment, great importance is also received by government service employees in first place, followed by farmers and entrepreneurs. Finding new business partners and exchanging ideas with others are the leading motives, whereas the item with lowest score is attending seminars and workshops. These findings could be attributed to disproportionate number of above mentioned categories in surveyed sample on one hand and the lack of time or interest in attending seminars among farmers.

H_{1d}: Leisure activities are the main reason for visiting the event for pensioners, students, pupils and unemployed people. Not having business obligations brings more possibilities to organize free time in better way. Hybrid character of the event and various supporting activities, attract the widest general public offering quality in spending leisure time. As an additional confirmation of the factor's importance could be pointed out Mean (4.1333) received by pensioners, representing the third highest.

H_1: By accepting four second level hypotheses, the initial hypothesis can be also accepted. It is confirmed through performed statistical analyses that motivation for visiting hybrid event differs among different groups of visitors.

H_2: Since two clusters can be identified, based on respondents' motive of the visit (*leisure* and *information*), the proposed hypothesis can be accepted.

The presented results show that visitors of this hybrid event have different motives for the visit. Looking at the motives of all visitors, the most dominant motives are: *Examining products before purchase, Finding business partners and Buying livestock, products and services*. This is quite expected since this event has mainly elements of trade show and consumer exhibition. Similar findings are presented by Tanner et al. (2001) in their paper, where trade show "Shopper" category visitors have "purchasing" as a dominant motive. Browning and Adams (1988) also found in their research that finding business partners is important in trade show industry. This item received a very high mean (3.486) which puts it on the second place on the list. This can be explained by the large number of farmers (34.3%) and entrepreneurs (28.6%) among the visitors. Apart from buying livestock, machinery and other equipment, farmers are also looking for food processing companies in order to sell their agriculture products. On the other hand, entrepreneurs are interested in companies that need new dealers or suppliers or just to learn about new trends and competition's offer. Rittichainuwat and Mair (2012) found in their study that most consumer exhibition visitors have a purchase motives whereas Bello (1992), Bello, Lohtia (1993) and Borghini et al. (2006) found that most trade show visitors have weak purchasing motives. Interesting thing is that results of this study can

describe International Agriculture Fair as a trade show ("Finding business partners" scored the second highest mean), but also as a consumer exhibition ("Examining products before purchase" and "Buying livestock, products and services" scored the first and third means, respectively) – confirming its previously described character of the hybrid event.

Practical implications, limitations, and future research

The International Agriculture Fair has a long tradition and therefore it is a "must visit" event for farmers in first place followed by other categories of visitors. The fair is regularly visited by parents with their young children in order to get acquainted with domestic animals. For students and retired people, this event makes a good way to spend a leisure time.

Results show that pensioners gave the greatest significance to the fourth factor. They see this event as a leisure time activity in first place. Students and unemployed people have similar opinion about the fair and they gave high marks to this factor. Therefore, it is possible to classify them under same category with pensioners. Many supporting activities present a main reason for visit in relation to aforementioned visitor category and make this event widely recognizable.

These facts could be related to the study conducted by Berne and Uceda-Garcia (2008) which showed that the content and concept of the event have an impact on process of making a decision about visiting a particular event.

In recent years, the fair is organized in cooperation with partner countries and exhibitors from those particular countries are numerous. Furthermore, it opens up many opportunities for all categories of visitors. This can be directly correlated with the result of the study and the fact that the most important motive for visiting the fair was *examining products before purchase.*

Based on personal participation in the organization of trade shows, and discussions with exhibitors, it was found that a large number of visitors who mainly explore and learn about the products and services, also decide to make a purchase during the fair or shortly after it.

In the foreground is the question of farmers who buy tractors and other machinery, equipment, tools, animals or chemical products. Certainly, this was due to the promotions and discounts during the fair, which is confirmed in the first factor - getting discounts and promotions. The presence of new exhibitors, especially from foreign countries goes in favour of the first factor since discounts and promotions are the main tool in attracting the target audience.

The current state of the world economy, slow economic growth and high competition are forcing the organizers of such events to explore the needs of exhibitors and visitors. Exhibition companies often guarantee a large number of visitors (Cox et al., 1986). Furthermore, Godar and O'Connor (2001) found in their study that identification and understanding of visitors' motivations to attend the trade show are keys for exhibitor in fulfilling their objectives.

This research provides guidelines for better understanding visitors' motivations to visit a

hybrid event. Since the line between trade show and consumer exhibition becomes thinner, such events could be a good example for event managers to balance between exhibitors' and visitors' motivations and needs. The results of the study also suggest that gathering information, learning about new trends and meeting experts are significant motivations and therefore organizers of such events should include those market segments while making a marketing strategy. Finally, supporting activities could be a good magnet for general public and a way how to spend leisure time. Exhibitors whose aim is mainly selling of goods and services have the major benefit from that. Organizers of hybrid events must bear in mind that such complex exhibitor structure requires attraction of visitors of different profiles – professional and general public.

The managerial implications can be observed from two different perspectives: for the event organizers this information is useful for future strategy planning on how to attract new visitors and indirectly exhibitors. Knowing the major motivations, organizers can improve particular event segments or even extend its portfolio. On the other hand, exhibitors will be able to plan their business activities towards the visitors' needs. This will help both sides in fulfilling the objectives. With these information organizers can create an event with better competitiveness which is crucial since many stakeholders are part of it.

This paper suggests future research in the area of visitors' motivations to visit hybrid events of a different theme, and also exhibitors' objectives while participating at such event. Further research may include exhibitors' actions in order to evaluate and choose the right event for their attendance. Future research may also examine organizers' strategies in balancing between participants' demands.

Regarding the limitations of this study, some notes should be discussed. There is a lack of research related to hybrid events of any kind. This study examined only one event and therefore results can not be applicable to other events with different themes without additional research and comparison. This study is exploratory and offers results as a base for further research.

Hybrid events are a good way to meet various stakeholders at one place. Exhibitors can use them as a strong and effective marketing tool for company promotion, the direct sale of products and services or to find new business partners. However, the major role should be played by organizers in order to have a successful event – repeat and new exhibitors and visitors on one side and economic benefit on the other.

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Appendix

Survey Instrument (constructed by authors)

a) Socio-demographic part

Gender	**Age**	**Profession**	**Education**	**First time visitor?**	**Do you attend similar events?**
1) M 2) F	1) ≤ 20 2) 21-30 3) 31-40 4) 41-50 5) 51-60 6) ≥ 61	1) Farmer 2) Entrepreneur 3) Government service employee 4) Professor/Expert 5) Retired person 6) Student/pupil 7) Unemployed 8) Press	1) High school 2) Faculty 3) Mr/MSc 4) PhD 5) _____	1) Yes 2) No	1) Yes 2) No

b) Visitors' motives: 1 (strongly disagree); 5 (strongly agree)

Motives for visiting the event	**Agreement level**
Buying livestock, products and services	1 2 3 4 5
Examining products before purchase	1 2 3 4 5
Collecting information for further purchases	1 2 3 4 5
Getting discounts and special promotions	1 2 3 4 5
Getting acquainted with innovations	1 2 3 4 5
Learning about new trends in agriculture	1 2 3 4 5
Gaining knowledge about new products	1 2 3 4 5
Attending seminars and workshops	1 2 3 4 5
Meeting experts	1 2 3 4 5
Exchanging ideas with others	1 2 3 4 5
Finding new business partners	1 2 3 4 5
Watching sports and entertaining programs	1 2 3 4 5
Valuable prizes for visitors	1 2 3 4 5
Leisure activities	1 2 3 4 5

MOTIVI POSETILACA ZA POSETU HIBRIDNOM DOGAĐAJU: PRIMER POLJOPRIVREDNOG SAJMA

Milan Ivkov[7], Ivana Blešić[8], Jovanka Popov Raljić[9], Anđelija Ivkov Džigurski[10], Tatjana Pivac[11], Tamara Jovanović[12]

Rezime

Upravljanje složenim događajima, kao što su hibridni, počiva na razumevanju savremenih tržišnih trendova. Cilj rada je da prikaže motive posetilaca za posetu hibridnom događaju, da identifikuje klaster na osnovu motiva posete i da pomogne organizatorima i izlagačima da zadovolje očekivanja posetilaca. Stoga, sprovedena je analiza ANOVA, faktorksa analiza i hijerarhijska klaster analiza. Rezultati jasno prikazuju elemente sajmova i prodajnih izložbi integrisanih u hibridni događaj, te su neki od glavnih motiva za posetu ovim događajima prisutni i kod posetilaca hibridnog događaja. Hibridni događaj je više od mesta za poslovne susrete. On je takođe mesto za edukaciju i zabavu. Stoga, organizatori događaja i izlagači treba da posvete više pažnje strateškom upravljanju aktivnostima. Rad, na osnovu izdvojenih motiva, sugeriše da organizatori događaja treba da se fokusiraju na komunikaciju sa izlagačima i posetiocima.

Ključne reči: *hibridni događaj, motivi posetilaca, izložba, sajam.*

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THE SELECTION OF ACQUISITION STRATEGY AND SOLVING TRADE SURPLUSES OF FOOD PRODUCTS BY USING THE SIMULATION

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Summary

Real business environment opens up many possibilities of business conduct, so that appropriate strategies, compatible with multicriteria requirements of the environment, potentially lead to the realization of the set goal. Adequate schedule and the optimal combination of available resources are possible to establish by a mathematical formalization in terms of the theoretical model that connects business outcomes with a cause or a probability of their occurrence.

Exactly research of the possibility of using and applying the results of theoretical models in solving the specific tasks in regard to expressing relations of initial assumptions related to selection of the optimal operating strategy, is the initial motive of this paper.

The theoretical models, which describe the real problem, can be analysed analytically or by simulation, depending on its complexity and the variables type, which describe it.

The model should provide achieving the managing balance through the model correction of the available operational resources, increasing in that way also the capacity of decision-making system in terms of futuristic knowledge insufficiency. The research results should show that the simulation model apply, in this particular example, enables to a company significant increase of business efficiency level, more complex utilization of the capacities, increase of the competitiveness, etc.

Key words: *model, simulation, strategy, selection skills, efficiency, decision.*

JEL: *C63, Q11*

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Introduction

Strategic management represents a process by which a company's activity directs toward the defined goal, which implies, in the first place, over viewing chances and priorities which appear in the environment, and based on the profiled managerial vision, articulates a developmental strategy.

The development strategy of the observed enterprise is a category which derives from the managerial vision, so it requires a careful approach and subtle exploring of the strategic management role in the process of a business policy creation. In regard to it was made numerous theoretical models, as a regression analysis of economic functions, mathematical programming, competitive models and models of simulation which provide a calculation of investments effects, before the system become operational.

By formulating the managerial vision, with ability to adapt to the business environment changes, and by reasoning and experience of a strategist, keeps and permanently raise a level of the business system efficiency as a whole.

In terms of ambiguous determined future permanently intrudes the problem questions of future sources anticipation and changes rate, i.e. establishment of the system state changes equation in accordance with the set goal.

Continuous development of a company implies a constant need for making the business system vitality strategy, i.e. the strategy of raising the functional potency aiming to make the managerial capacity. However, once established relation disturbs, so a short-term imbalance in supply and demand of products, directly replicates, as on loss of some form of resources, as well as on insufficient capacities utilization. Such deviations, which manifest through a dysfunctional relation, require a refined scientific analysis of input – output variable systems management. That is why research on supply chain risk management has been very popular in recent years (Juttner et al., 2003). Understand the nature of supply chain risks while building resilient supply chain networks is of the great importance (Christopher, Peck, 2004). Supply chains are affected by many factors, including the uncertain changes in business strategies. It is easier to mitigate the supply chain risks with more information (Christopher, Lee, 2004). Separating the recurrent supply risk and disruption risk for appropriate mitigation mechanisms is of the great importance (Chopra et al., 2007). It is also significant to mention the study on how companies perceive, predict, and assess the risks in order to protect their supply chains accordingly (Sheffi et al., 2003).

The management has a dilemma of selecting the theoretical model, which represents the approximation of a part of the real world, and which results can be used in purpose of increasing the efficiency of operating and vitality of the observed business system conduct. The mentioned one can refer to an integral business, but also to some segments of the business system, in order to use a synergetic effect of a subsystem composition.

The business problems of the enterprise are contained, primarily, in insufficient business efficiency which surely comes out from costs burden of trade surpluses (providing stocks). In

case when the service quality is directly expressed by „freshness "of the production program, the market opportunities give signals to unused potentials of production possibilities.

In that sense is right that the selection of the appropriate theoretical model for the acquisition and the problem of efficient providing of the trade „surpluses", can represent the emerging strategy, necessary to check by the simulation experiments, by the Monte Carlo method.

Experience has shown that simulation is an extremely effective and efficient method that requires extensive knowledge of the dynamics of agriculture as a system (Šomodji, 2011). Over the past decade, the interest in Monte Carlo simulation has increased (e.g., Winston, 1996; Thompson, 2000; Vose, 2002; Aven, 2005; Richardson, 2006). Monte Carlo simulation offers business analysts and investors an economical means of conducting risk-based economic feasibility studies for new investments and a non-destructive means of stress testing existing businesses under risk (Richardson et al., 2007). The Monte Carlo methods are useful for modelling the phenomena with a significant input uncertainty and allow the effect of varying the level of inputs on the final output to be analyzed (Špička et al., 2009). It is a generally accepted method of modelling risks, which studies the probable outcome of an event characterized by any input parameters and described by well-known functions (Kovacs et al., 2007). The general conclusion which emerged from the analysis performed by Nikolić, 2009, is that to achieve greater accuracy of simulation output results a large number of independent simulation experiments has to be done.

Materials and Methods

There were two types of materials used for the purpose of this paper. First, the relevant books and scientific papers related to the topic. Second, the data records (accounting register) of the company "Šaran" from Prijedor city.

Several methods were used during preparation of this paper. Content analysis were used to study the literature (books, scientific papers, etc.), and also data records (accounting register) of the company "Šaran". Methods of modelling and simulation were also used, with special emphasis on the Monte Carlo technique.

The Simulation Model

Improvement of business efficiency of an economic entity requires reaching the decision-making model by a symbolic description, and to include the modelled management information into a process of operational decision-making.

The operational efficiency was determined by a realized profit, which represents a monetary term of an operational realization quality, as a relation between input and output values in which dominates the stock costs, which in this context, represent a criterion variable. The research process of mutual correlation between the variables in the model and quantity identification of the criterion variable probability distribution enables a decision-maker to understand the complexity of the problem in the context of the project evaluation.

The simulation model must be constructed purposefully for every decision-making situation, and by its nature, it requires a specification of variables and parameters in the model, while the conditions under which the system is observed must be adjusted to the conventional rules of decision-making. For these models analysis is not possible or it is very complicated to apply the analytical methods.

The Monte Carlo technique consists of the experiments simulation, where a decision-maker plays with the system built to fix to a man, researching the effects of the selected alternative in compliance with the selected options in the appropriate time interval. Therefore, a basic task is to anticipate the sequence of new events by making an auxiliary construction, in order to come to a transparent process and, with such creative visualization, feature a part of reality suitable for checking the strategic plans, but also gaining personal experience (Vujošević, 2004).

The essence of the Monte Carlo technique consists of series of simulations in order to determine a characteristic of the analyzed system operating, according to the selected parameters or distribution law of the observed variables. The analysis procedure by this technique provides a precise logical procedure of modelling a criterion variable (y) through the following phases:

- Identification of criterion and relevant random variables,
- Quantification of variables,
- Mutual relations among variables,
- Evaluation of probability distribution for input variables and their connections,
- Using the Monte Carlo simulation for the experiments, aiming to get satisfactory distribution of output variable probability or calculation of the average value of defined indicators,
- Evaluation of a project using a part or all information contained in the evaluated distribution (Čupić, 2001).

Domain of the model application and the simulation method is practically without limitations in the context of its practical application possibility for making business decisions, aiming to increase a level of business efficiency, especially in the procedure of setting the optimal strategic orientations.

The accelerated development of information technologies, as well as developing the program of common and special purpose provides creating also apply of the simulation models on numerous problems of business decision-making.

Simulation, as a methodological tool for the preparation and decision making in food production is gaining in importance. It is especially rampant in the USA and later in Western Europe and less developed countries (Šomođi, 1997).

Implementation of the simulation model for managing the purchasing department in the company "Šaran" from Prijedor

The company „Šaran" from Prijedor has, in its assortment, the products which characteristics are such, that the opportunity of sale has been dominantly determined by the „freshness" in the moment of exchange realization. Such products are prevalently a fresh fish, and in the assortment dominate a carp from ecological breeding. It is important to emphasize that such products lose their usability features by storing, so, in the process of stock optimization, they require careful management, as a framework of sustainable development of the parent company.

In the observed example, it is well known that demand of products ranges from 20 to 80 kg per a working day. Based on the existing accounting register, in the previous period was determined an empirical distribution of daily demand (QT) and an adequate relative frequency ($p[QT]$), as it was shown in the Table 1. It is important to emphasize that the business dynamics enables that the product orders at the end of the working day, to deliver promptly on the beginning of the following working day, and all to be realized in the moment, when demand for the product is unknown.

Table 1. Empirical law of daily demand distribution for fresh carp

QT	20	30	40	50	60	70	80	Σ
$p[QT]$	12/240	24/240	48/240	72/240	48/240	24/240	12/240	1

Source: Authors' calculation based on data from Šaran Company, 2013.

A fact that the product is purchased in the moment in which the information on demand is unknown, a decision is made in terms of uncertainty. A valid rule is to purchase the amount required the day before, so the trade costs (stocks) do by selling at a lower cost PC_1=5KM/kg. The management insists on reassessment of this rule. A decision-maker considers that it is necessary to reassess a new rule, and this is to purchase the expected value of demand (in this example is 50 kg). A key problem which determines the economic efficiency and sustainable development is the purchase optimization, along with ecologically acceptable care of purchased, not realized products. It is well-known that the product purchases at a cost NC=7 KM/kg, and sell at a cost PC=14 KM/kg. In that sense was done the comparative analysis of the offered options (strategies):

- Valid rule is to purchase the amount required the day before, along with assigning the unsold amount to other legal entity. All these should mean that the stocks in the future period sell to a company which deals with products processing in animal food after a lower price PC_1 = 5 KM/kg. In the implemented analysis, we mark this option as a RULE 1,
- New rule of ordering is to purchase the expected value of demand along with the same order of stocks taking care of, as in the previous rule. In the implemented analysis, we mark this option as a RULE 2,
- New management option which refers to processing of the unsold quantity into a new trade-acceptable form, where economic effects of processing and market realization

are possible along with a lower unit profit PF_1=0,5 KM/kg. This option signifies drying fish, where by drying 1 kg of carp gets 0.5 kg of dried fish which sells at a cost PC_2=15 KM/kg, and the costs of drying (processing) amount TP=1 KM/kg. This production option is followed by two acquisition regulations:

- Production processing of trade costs, along with the acquisition regulations according to demand from a day before. In the implemented analysis, we designate this option as a RULE 3,
- Production processing of trade costs, along with the acquisition regulations according to the expected value of demand. In the implemented analysis, we designate this option as a RULE 4.

In order that the comparison of the offered options be adequately implemented, it is necessary to develop a method of demand generation, which suits to a defined time period of the product's usability. There the empirical law on demand distribution and a fixed time interval were used. Thereby creates and prepares a platform for the simulation experiments application by using the Monte Carlo method.

Table 2. Distribution of relative frequencies and adequate random numbers

QT	p(QT)	Cumulative	Random numbers interval
20	0.05	0.05	00 – 04
30	0.10	0.15	05 – 14
40	0.20	0.35	15 – 34
50	0.30	0.65	35 – 64
60	0.20	0.85	65 – 84
70	0.10	0.95	85 – 94
80	0.05	1.00	95 – 99
Σ	1.00		

Source: Authors' calculation based on data from Šaran Company, 2013.

In regard of using the Monte Carlo method, it is inevitable to establish the connection between the relative frequencies (probabilities) and evenly distributed numbers on an interval [0.100], as shown in the Table 2.

With the available information groundwork have been acquired the conditions for running the simulations, aiming to make an adequate selection of the offered management options. It is important to emphasize that, in the implemented simulation, the designations have the following meanings:

- Simulation bases on repeating the experiments to 200 times, for every decision-making rule, according to randomly chosen time intervals, by using the programmatically determined random numbers from Excel, designated with RAND,
- We assign an adequate demand (QT) to the observed ordering interval, in accordance to the random numbers interval,
- The ordering rule directly corresponds with demand from a day before in the RULE 1 and the RULE 3, i.e. $QN_i = QT_{(i-1)}$

- The ordering rule directly corresponds with the expected value of demand in the RULE 2 and the RULE 4, so the ordered amount (*QN*) matches to the previously determined value of demand, i.e. $QN = 50$ kg for all days ($i=1,2,...,n$),
- The sold quantity (*QP*) calculates by respecting the following terms:
  - o If $QT = QN \rightarrow QP = QT$
  - o If $QT \neq QN \rightarrow QP = \min(QT, QN)$
- The remaining quantities (stocks, *QZ*) calculates by respecting the following terms:
  - o If $QN > QP \rightarrow QZ = QN - QP$
  - o If $QN \leq QP \rightarrow QZ = 0$
- Profit (*PF*) calculates by respecting the following terms:
  - o Regarding the Rule 1 and the Rule 2: $QP \cdot PC - QN \cdot NC + QZ \cdot PC_1$
  - o Regarding the Rule 3 and the Rule 4: $PF = QP \cdot PC - QN \cdot NC + QZ \cdot 7.5$, where $(7.5 = \frac{PC_2 - TP}{2})$,
- Such described procedure was repeated for all 200 time intervals (working days) within which was implemented the simulation procedure.

The collective results of the simulation experiments are shown in the Table 3.

Table 3. Collective results of defined rules simulation experiments

Rule of ordering/care	QT		QN		QP		QZ		PF	
	Σ	DN. PR.	Σ	DN. PR.	Σ	DN. PR.	Σ	DN. PR.	Σ	DN. PR.
RULE 1	9850	49.25	9,810	49.05	8,140	40.70	1,670	8.35	53,640	268.20
RULE 2			10,000	50.00	8,710	43.55	1,290	6.45	58,390	291.95
RULE 3			9,810	49.05	8,140	40.70	1,670	8.35	57,815	289.08
RULE 4			10,000	50.00	8,710	43.55	1,290	6.45	61,615	308.08

Source: Authors' calculation based on data from Šaran Company, 2013.

Analyzing the results in the previous table, especially according to the criterion of profit realization, it can be easily concluded that it is necessary the advantage of the Rule 4 in regard to other rules in determining the dynamics of ordering and a way of ecologically acceptable rule of the trade costs providing.

The purchase department of the trading company „Šaran" from Prijedor should adopt some developmental directions, came out from the results of simulation experiments for the observed models of ordering rules and ecologically acceptable way of taking care of the stocks, in a way that:

- Daily purchases the amount of carp which matches to the expected value of demand (in the observed example it is the amount of 50 kg daily),
- Unsold quantity (stocks) should be taken care by the production acceptable processing, which in the observed case refers to drying the unsold quantity and including it in the new product – dried carp assortment. The costs of processing (drying) refer to service engagement of a person trained for this working task,

- The increased profit, the company can direct to new developmental projects, as well as training of the company for providing the service to other companies of similar business orientation,
- Increasing the level of existing business efficiency reflects also in acquiring the competitive advantage in regard to innovations in the assortment, because this product offers rarely in points of sale of similar type, as well as in other companies of trade-orientation. This product can also be offered to the trading companies, and especially hyper-markets,
- Increasing the business efficiency contributes to increased employees satisfaction, while opens a real possibility that a part of newly-made profit directs to increase of employees' salaries, but also to acquire the real psychological indicators of job security, which represents to many employees in economic recession a motivation for the partnership with an employer,
- Creating a partnership with suppliers regarding the safety of sale, where opens a possibility of purchase prices correction, aiming to get a quantity discounts in accordance with sale of larger amounts of products,
- Laying the foundation for greater sympathy of social community regarding a new possibility for employment and getting incentives from the local authorities, etc.

Analysis of suitability, representativeness and economic justifiability of the model

Real business environment opens numerous possibilities of business conduct, while some options enable the achievement of desired economic quality, expressed in the form of business goals, i.e. the efficient strategies. Many real factors express the adequate connection, which has been recognized, quantified and included in the adequate model, as a scientific platform of management conduct.

The selected model, through management actions, adjusted to circumstances in which exists the business system, becomes a powerful analytical tool for the scientific decision-making in terms of uncertainty. Following this train of thought, an economic entity successfully minimizes a difference between the existing and the desired state, along with optimal use of natural – technical goods, by which makes a control balance regarding sufficiency of the available operational resources, in direction of the sustainable development.

Determination of key factors of business success, the terms which determine its realization, hierarchical correlation of goals and sub-goals, and approximation of structure and conduct of a part of reality, is a meaning of forming and application of the decision-making model. In that sense, a key assumption of business success is included in the adequate selection of critical factors of business success of the economic entity, to this refers the exclusive model support.

Many real situations of a business portfolio programming require that the accent is put on the optimal management of the company's purchasing department, which is especially emphasized in turnover or production of products, regarding which the quality has been predominantly caused by the products „freshness". The economic effects of the modelled

results exceed the costs of modelling, which include relatively available software package and a person who is trained in the modelling methodology, by which affirms a discipline of scientific-intuitive decision-making.

Formulating the pro-active strategic directions enables to the modelled economic entity, by a set of planned actions cross the imaginary path from the current to the desired state, while at the same time adjust its organizational-technological platform and management style to the market, economic, legal-political, ecologically-natural and other factors which upset its business. Thereby, information basics of planning must be defined by the relevant information requirements and to represent the base from which the application of appropriate algorithms can get information that are necessary elements of planning for the development of plans and the necessary planning documents (Novković et al., 1997). A positive rate of a business result change, in which also participates the business environment, comes out from the system formalization by the model description of symbolic connection of a constant and variables in the model. The model selection of the management option adjusts to the concrete business system and their goals, by which enables judging on business chances and their alternatives, liberating the management from business illusions.

Conclusion

Barter in the process of social reproduction has been directly determined by relation between supply and demand on the market. It is not necessary to emphasize especially that the quantity of products, buyers are ready to buy, is caused by many factors among which there is a pattern in the conduct which has been successfully identified by the adequate model. The volume of demand on the market is a random variable, which causes the exchange dynamics, and thereby the production and turnover.

Over viewing the initial certainties, defining the real and adaptive goals, quantification and logical connection of some internal and external factors refined by the empirical stuff, leads to construction of an adequate simulation model. By its implementation, we reveal business sensitivity in the context of the set direct and global goals, directed to increase of the purchasing department's business efficiency level in the concrete business system:

- The previous practice of decision-making in regard to dynamics of acquisition and taking care of trade surpluses has not used the possibilities regarding exploitation of the simulation models results, which evidently increase the level of marginal efficiency. A basic reason are a traditional approach and insufficient initiative in regard to new knowledge implementation,
- Output data of the constructed model corroborate the set goal, which has been especially emphasized by the structure of output variables. In that sense, the management option provides increase of profit along with somewhat higher procurement, whereby the volume of stocks decrease, which is supplemented by the adequate approach while providing the trade surpluses.
- Exactness and wholeness of the modelled results is not limited by necessary investments, which refer to the available software and adequate consulting cooperation. Strategic objectives opens new business alternatives, which refers to possibility of the activity

diversification to production-serviceable drying of fresh fish, and new sources of business efficiency,

- In the analyzed business system, business optimization in terms of increasing the level of the purchasing department efficiency of the observed trading company has no adequate analytical substitution. Mapping of business conduct of the analyzed system in the model of mathematical simulation satisfies a homomorphine of the system and the model, quality, size and the structure of the modelled management information, while experiments with other theoretical models stays open for some other aspects of the observed problem.

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IZBOR AKVIZICIONE STRATEGIJE I ZBRINJAVANJE TRGOVINSKOG SUFICITA PREHRAMBENIH PROIZVODA PRIMENOM MODELA SIMULACIJE

Neven Mikić[4], Ivana Ljubanović Ralević[5], Zoran Rajić[6]

Rezime

Realni poslovni ambijent otvara brojne mogućnosti poslovnog ponašanja, tako da odgovarajuće strategije, kompatibilne višekriterijumskim zahtevima okruženja potencialno dovode do ostvarivanja postavljenog cilja. Adekvatan raspored i optimalnu kombinaciju raspolozivih resursa moguće je uspostaviti matematičkom formalizacijom u vidu teorijskog modela koji povezuje poslovne ishode sa uzrokom ili verovatnoćom njihovog nastanka.

Upravo ispitivanjem mogućnosti korišćenja i rezultata primene teorijskih modela u rešavnju konkretnih zadataka u pogledu izražavanja odnosa početnih postavki u vezi sa izborom optimalne strategije funkcionisanja, polazni je motiv teme rada.

Teorijski modeli prilagođeni praktičnim problemima, u uslovima stohastičke neodređenosti su regresiona analiza i modeli simulacije, u uslovima neizvesnih poslovnih ishoda odgovarajući konkurentski modeli, dok u uslovima determinističke povezanosti matematičko programiranje.

Dakle, izgradnja modela treba da omogući postizanje upravljačke ravnoteže kroz modelsku korekciju raspoloživih operativnih resursa, podižući tako i kapacitet sistema odlučivanja u uslovima nedovoljnosti futurističkog znanja. Rezultati istraživanja treba da pokažu da primena simulacionog modela, u konkretnom primeru omogućava preduzeću značajno podizanje nivoa poslovne efikasnosti, potpunije iskorištenje kapaciteta, povećanje konkurentske sposobnosti itd.

Ključne reči: *model, simulacija, strategija, veština izbora, efikasnost, odluka.*

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INFLATION IMPACT OF FOOD PRICES: CASE OF SERBIA[1]

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Summary

Food prices traditionally have an impact on inflation around the world. Movements in these prices are coming more from the supply side, then from the demand side. If treated as a supply shock, monetary policy should not react. However, food prices are part of headline inflation that is an official target for most central banks. Serbia conducts Inflation targeting and faces serious challenges with food price volatility. Food price volatility in Serbia hampers inflation forecasting, and may have a negative influence on inflationary expectations and public confidence in (i.e. credibility of) the Central bank, all of crucial importance for success of Inflation targeting. There are several important possible improvements that may decrease volatility of food prices but also limit negative impact of food price volatility on Consumer Price Index (CPI) as a measure of inflation. These improvements are very important for success of Inflation targeting in Serbia.

Key words: *food prices, Inflation targeting, price volatility, Serbia.*

JEL: *Q13, Q11, E31, E52*

Introduction

Food prices have increased during the past decade on a global level. That has influenced inflation around the world since food is an important element of Consumer Price Index (CPI) which is most commonly used as a measure of inflation. However, it is important to note that impact of food prices on inflation can be very diverse.

Firstly, it is important to note that on average inflation in emerging market economies is going to be differently affected by food price changes compared to inflation in developed economies. The influence of these prices is directly related to the level of wealth or economic development of the economy, since the share of income spent on food declines as the level of income rises. And this is reflected in the structure of CPI i.e. the weights attributed to specific

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elements of consumption within the CPI. Emerging market countries have a weight of food prices in CPI around 30% on average. Developed economies are more resistant to food price movements since weight of these prices in CPI of these countries is on average about 13% according to some estimates (Cecchetti, Moessner, 2008). Therefore, the same global food price movement, as a rule, has a higher direct effect on inflation in lower income countries, then on inflation in higher income countries.

Secondly, food inflation may be coming from the demand side if the increase in income of households is fueling demand and pushes the food prices up. Since food prices are relatively flexible, their upward movement may be an indication of general rise in demand that can fuel inflationary pressures across the board. If this is the case, increase in food prices should be an early warning signal for the central bank to tighten its monetary stance.

Also important is that if the food price shock is a transitory one, with relatively quick reversal to the previous level of these prices, it would be adequate not to react with monetary policy to these shocks. The influence of this price shock will in any case gradually exit the inflation measure (Aoki, 2001). However, if the central bank would want to eliminate this short term impact on inflation, it would be very hard to achieve this effectively. Namely, food price movements are sometimes very sudden and monetary policy produces results with a time lag, so called transmission lag of monetary policy. On the other hand, even if the food price shock is expected, restrictive monetary policy reaction with ambition to decrease the price shock coming from food prices, and swiftly revert prices back to the previous level, would most probably have to be excessive and almost certainly would cause a substantial overall drop in economic output and employment.

However, despite this possible one-time effect of food prices on inflation, it is important not to ignore possible postponed second-round effects on salaries and inflation expectations. These effects should be taken into account by monetary authorities in formulating an adequate policy response, since they can influence future inflation. Making a distinction between these one-of and second-round inflationary effects, is the reason why central banks also follow inflation without the prices of food and energy, commonly known as core inflation[3] to reveal and track the underlying more persistent inflation components. However, core inflation is not commonly used as inflation target, since it can sometimes be detached from the inflation directly observed by consumers, and therefore, targeting core inflation by the central bank may adversely affect its credibility (Cecchetti, 2007). Having said that core inflation should not be kept undisclosed. As a rule, it is less volatile then headline inflation, and can contribute to keeping inflation expectations close to inflation target (OECD, 2005). Measuring its persistence is also very important (Bilke, Stracca, 2008).

It is not always easy to determine the nature of a food price shock. Weather it is a transitory (supply) or permanent (demand) price movement, nor is it ease to be certain whether a food price movement is going to generate second-round effects on inflation. And all of this is important for formulating an adequate and effective monetary policy response. It is

3 There is large number of various definitions of core inflation, but this is the most common one.

important to try to decrease the volatility of food prices, and employ adequate statistical methodologies in creation of CPI as a measure of inflation. This is especially important in emerging market transition countries (like Serbia) where food price impact on CPI is relatively high. Therefore, decreasing unnecessary volatility in food prices is not just good for the farmers and consumers. Lower food price volatility and its lower impact on CPI is very important for Inflation targeting conducted by a central bank as well.

Literature overview

Numerous studies of food price impact on inflation have been conducted for developed and emerging market countries, especially in the past two decades. However, literature on food price impact on inflation in Serbia is very scarce with several internal analyses conducted by the central bank.

For the purpose of this research of particular importance is the following literature. Bryan and Cecchetti (1994), and Bryan and associates (1997) investigate various measures of inflation. Mohanty and Klau (2004) investigate monetary policy rules in emerging economies. Paper by OECD (2005) defines various types of core inflation and tests their predictive power for future inflation on a sample of industrial countries (US, Canada, Japan, Euro area and U.K.). Cecchetti and Moessner (2008) investigate the impact of rise in food and energy prices on dynamics of headline inflation in emerging market countries and developed countries. Richards and Pofahl (2009) analyze the pass-through of commodities prices into food inflation and find that it is not constant. Catão and Chang (2010), explore in their paper how small open economies should react on imported inflationary pressures, mainly coming from commodities prices. Walsh (2011) finds that food price impact on inflation is significant especially in lower income countries and that core inflation may be misleading. Gómez and associates (2012) are exploring models for food inflation forecasting to be used by developing countries conducting Inflation targeting. Anand and associates (2014) estimate the second-round effects of food inflation in India and find that it is relatively high due to high share of food expenditures in household incomes and since food inflation influences inflationary expectations and future wage settings.

Contribution of this paper to the literature is that it analyses the recent food price impact on inflation in Serbia and adequacy of monetary policy response. This article also aims to identify potential improvements that could lead to decrease in volatility of food prices, and potential improvements in methodology that could decrease the impact of food price movements on CPI as a measure of inflation in Serbia.

Impact of food prices on inflation

There are several important ways food prices may influence headline inflation. To measure this influence, it is important to have an adequate measure of core inflation[4] so to determine the relationship of core to headline inflation. The nature of a food price shock is very important and initially it is not easy to conclude what type of shock it is, and what kind of

4 Cecchetti and Moessner (2008) use core inflation measure excluding food and energy prices.

monetary policy stance would be correct to undertake.

If there is an increase in demand coming from continuous significant growth rates in an economy, we might be faced with continuously increasing demand for food, especially in developing countries. This can lead to a persistent inflationary pressure and lesser degree of reversion of headline inflation to core. So demand driven food price shock may persistently push up headline inflation and would not lead to headline inflation reverting to core.

Second possibility is that increase in food prices has happened because of an adverse supply shock. In that situation, impact on inflation is most probably just a transitory one. If that is so, headline inflation would be reverting to core, and this is the situation we have mentioned in which adequate monetary policy response would be to ignore the food price shock.

Alternative to this would be if these shocks repeat or if they lead to second-round effects on inflation. This could be confirmed if core inflation reverts to headline inflation. That is the situation in which, despite supply nature of food price shock, monetary policy response has to be adequately structured to control inflationary expectations and increase in future wage settings.

If we want to study whether CPI (headline inflation) reverts to core inflation, i.e. whether the supply shock is temporary, without the necessity for monetary policy intervention, we should consider the following regression:

$$\pi_t^h - \pi_{t-12}^h = \alpha + \beta_1\left(\pi_{t-12}^h - \pi_{t-12}^c\right) + \varepsilon_t \qquad (1)$$

Where:

π^h labels headline inflation, and π^c labels core inflation. If coefficient β_1 is negative, that means that headline inflation reverts to core. In most of developed countries, research has shown (OECD, 2005; Cecchetti, Moessner, 2008) β_1 coefficient tends to be negative. Constant term α in equation (1) if different from zero implies that core inflation can predict, to a certain extent, headline inflation. If α equals 0 and β_1 coefficient equals -1 that would mean that headline inflation would completely revert to core inflation in a year's time. If the monetary policy stance was not to react to initial food price shock, it was correct.

Similar regression can help us conclude about the possible existence of second-round effects of food price supply shock. Namely, if core inflation reverts to headline inflation. That would mean that second-round effects of an initial food price shock have been pushing the core inflation upward most probably through inflationary expectations and future wage settings. This can be analyzed with the following regression:

$$\pi_t^c - \pi_{t-12}^c = \alpha + \beta_2\left(\pi_{t-12}^c - \pi_{t-12}^h\right) + \varepsilon_t \qquad (2)$$

If β_2 equals 0, that would mean that core does not revert to headline inflation. If α equals 0 and β_2 coefficient equals -1 that would mean that core inflation would completely revert to headline inflation in a year's time.

Next, since inflation forecasting is very important for Inflation targeting, it would be important to understand whether food price inflation has any predictive power on future headline inflation i.e. can help in forecasting headline inflation. For this purpose, a following regression could be used:

$$\pi_t^h = \alpha + \sum_{k=1,12} \beta_k \pi_{t-k}^h + \sum_{k=1,12} \gamma_k \pi_{t-k}^f + \varepsilon_t \qquad (3)$$

Where:

π^f stands for food inflation. This regression should answer the question whether headline inflation is reliant on lagged headline inflation and lagged food price inflation. Second term on right hand side of equation (3) should take into account potential autocorrelation of headline inflation. Therefore, the sum of regression coefficients on lagged food price inflation γ in third term can provide us with a desired answer. If this sum is significantly different from zero past food price inflation in a country can help predict headline inflation.

Finally, if we measure the autocorrelation of food price inflation, we may have an indication of persistency of food price inflation:

$$\pi_t^{f^5} = \alpha + \sum_{k=1,12} \rho_k \pi_{t-k}^f + \varepsilon_t \qquad (4)$$

If the sum of ρ correlation coefficient on lagged food inflation is zero, then conclusion could be that food inflation is not persistent.

Recent food price and Inflation dynamics in Serbia

Food prices represent a very significant portion of CPI as a measure of inflation in Serbia (Table 1). As we can see from Table 1, food (unprocessed and processed) prices had a joint contribution of 38.8% of CPI prior to last major CPI revision at the beginning of 2013. After the last CPI revision, food prices have a somewhat smaller weight in CPI, but still very significant – 34.5%. It is lower but still above average for advanced emerging market countries. Therefore it is obvious that food price inflation in Serbia is potentially very important for overall headline inflation dynamics.

5 In this equation food inflation should be expressed as a monthly change in food prices with excluded seasonality.

Table 1. Comparison of weights for selected CPI categories in Serbia

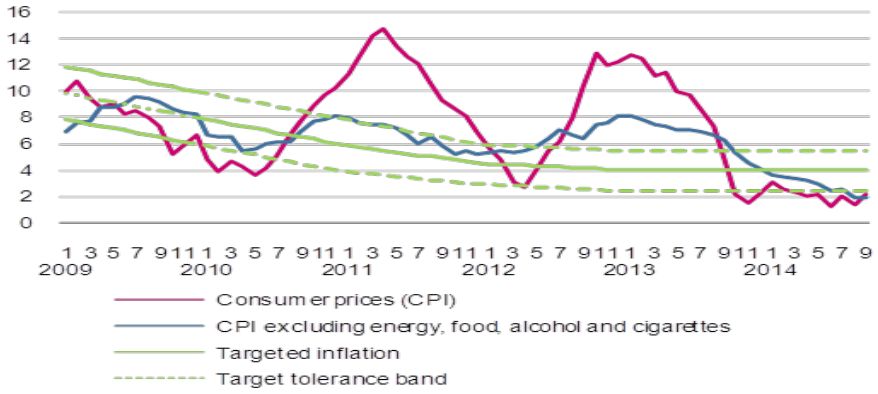
	Old weights	New weights	Difference
Consumer prices (CPI)	**100.0**	**100.0**	**0.0**
Unprocessed food	13.0	12.6	-0.4
Processed food	25.8	21.9	-3.9
Industrial products excluding food and energy	25.5	29.9	4.4
Energy	17.5	14.8	-2.8
Services	18.2	20.8	2.6
Core inflation indicators			
CPI excluding energy, food, alcohol and cigarettes	38.3	42.9	4.6
CPI excluding energy and unprocessed food	69.5	72.6	3.1
CPI excluding energy	82.5	85.2	2.8
Food and non-alcoholic beverages	**38.8**	**34.5**	**-4.2**
Administered prices	**22.5**	**20.4**	**-2.0**
Excise products	**11.6**	**14.1**	**2.5**

Source: NBS Inflation Report, May 2013.

Serbia implements Inflation targeting officially since end of 2008, but unofficially since 2006 (Šoškić, 2015). One of the main reasons for implementation of Inflation targeting was that it was expected that this monetary regime will be effective in terms of bringing the inflation down, and stabilizing inflation within the target corridor, with a potential side effect of stabilizing output.

However, if we look at the Figure 1 it is obvious that inflation path since inception of IT in Serbia exhibits substantial volatility. In the initial phase of implementation, it seemed that inflation has been steadily brought down within a target corridor. However, this period is also a period of first wave of recession in Serbia after the global financial crisis, with GDP dropping down around 3.5% in 2009. So, the gradual decline in inflation within the corridor of inflation targeting was most probably more an outcome of decline in aggregate demand due to severely depressed output caused by the global crisis, then by effectiveness of Inflation targeting.

Figure 1. Inflation in Serbia (YoY rate, in %)



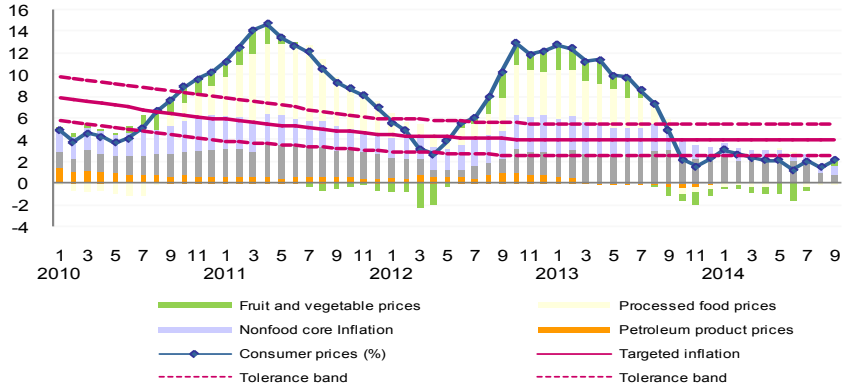
Source: National bank of Serbia, www.nbs.rs/internet/cirilica/30/30_9/kretanje_inflacije.html

As it is obvious from Figure 1, inflation very soon by the end of 2009 slipped below a lower bound of inflation target corridor and has remained out-side of this corridor most of the time ever since. Inflation has gone through two huge spikes above the upper band in 2011 and 2013.In the rest of the period Inflation was mainly bellow the lower band of inflation target corridor but as is widely known (Mishkin, Savastano, 2002) undershooting an inflation target is just as bad and costly as overshooting it.

So what is the main driver of inflation volatility in Serbia, and has monetary policy response been adequate?

Let us go deeper in the structure of inflation dynamics in Serbia in recent years (Figure 2). It is obvious that main drivers of inflationary and disinflationary pressures are coming from food price movements (both processed and unprocessed). Non-food core inflation throughout the period has remained relatively stable. Food price shocks have been treated as supply side shocks with temporary effects, and monetary policy response was in a form of modest tightening (small and gradual increase in reference rate of NBS). Such policy stance was designed to prevent second-round effects on inflation expectations and future wage settings, and to limit long term inflationary effects of these price shocks. Also worth noting is that main drivers of disinflationary and deflationary monthly and quarterly inflation episodes in Serbia were again driven by disinflation and deflation of food prices.

Figure 2. Contribution to CPI growth in Serbia (YoY, in %)



Source: NBS Inflation Report, November 2014.

Therefore it is fair to say that huge spikes of inflation above the upper band in 2011 and 2013 are a consequence of a supply shock in food production and increase in food prices. Subsequent disinflation is again driven by food prices. Obviously, food prices are very volatile in Serbia.

Serbian CPI is oversensitive to prices of unprocessed and processed food. In addition, according to an internal central bank of Serbia regional food price analyses for South East Europe, volatility of food prices in Serbia proved to be highest in the SEE region.

Let us now analyse the influence of food prices on inflation in Serbia, and the adequacy of monetary policy response. It is obvious that after initial food price shock, headline inflation is reverting to core inflation[6] in the following period (Figure 1. Also, it is clear from the food inflation movements in Serbia, that there is no food inflation persistence. Therefore, the food price shock was not coming from the demand side (lack of food price persistence, equation (4)), and was transitory in its nature since the headline inflation soon reverted to core inflation (equation 1). So, the central bank has treated the food price shocks of 2011 and 2013 in a correct way.

Was there a second-round effect of food inflation on headline inflation? If we observe the data it is clear that there is no evidence of core inflation reverting to headline inflation[7]. That means that there were no significant second round effects on headline inflation from initial food price shock. Monetary policy stance of modest gradual tightening with a signalling effect to prevent increase in inflationary expectations and future wage setting was adequate.

This over sensitivity of inflation to food prices makes it very hard to conduct Inflation targeting successfully in Serbia. Food price volatility hampers inflation projections, may incorrectly influence inflationary expectations, and, can adversely affect public confidence in the central bank. As we know, precise inflation forecasts, central bank credibility, and anchored inflationary expectations with and inflation target, are essential prerequisites for success in Inflation targeting (Batini, Laxton, 2007).

Therefore, food price impact on inflation in Serbia has to be considered seriously if Inflation targeting monetary regime is to have a chance of success.

There are two important domains of potential improvements in the area of food price impact on inflation in Serbia. One is to decrease the volatility of food prices, and the other is to limit the influence of food prices and their volatility on CPI.

Recommendations and conclusions

There are several measures that could contribute to decrease in volatility i.e. stabilization of food prices in Serbia.

Existing Government institution for commodities reserves should consider adjusting its operations in line with markets movements. It would be not just profitable to buy unprocessed foods when their price is low, and sell when their price is high, but it would also contribute to stabilization of prices of some major unprocessed food commodities.

If the Government is already conducting subsidies for certain economic activities, then subsidies within agricultural production aiming to decrease the output volatility in food production, should be considered too. Loans to agricultural producers for hail protection, irrigation, flood protection etc. are not just beneficial for agricultural production itself, but also for decrease in its output.

6 Measured as CPI excluding, food, energy, alcohol and cigarettes.

7 This could be confirmed with running a regression of equation (2).

Decrease in tariff and nontariff barriers for import and export of unprocessed and processed food could help prevent excess volatility in food prices[8].

Special attention in workings of existing Government Antimonopoly commission should be given to trading channels with unprocessed and processed food. Measures to increase competition in this domain would be welcome for stabilization of food prices.

Government endeavor to initiate and develop derivatives markets for major unprocessed food commodities would, again, be good not just for the farmers, but also for decrease in volatility of food prices.

There is room for some methodological improvements concerning the CPI construction, as well. These could dampen the impact of food price movements on headline inflation measured by CPI.

A step in a good direction has already been taken at the beginning of 2013 when food price weight in CPI was decreased from 38.8% to 34.5%. It is worth exploring whether there is additional room within a statistical framework of Harmonised Index of Consumer Prices (HICP) and EU Statistical office (Eurostat) for additional methodological improvements to decrease the sensitivity of CPI to food inflation.

Besides, it is worth exploring whether in gathering data on food prices, averaging of observed levels of prices for longer periods of time (moving averages) could potentially contribute to lower volatility of data on food prices, and therefore decrease the volatility of food inflation and CPI as a headline inflation measure.

It is important to know more about the nature of food price impact on inflation in Serbia. But it is also important to improve the system of food production and trade. Improvements are possible also in the methodology used to compile food prices and CPI. Some of these measures aiming for decreasing the volatility of food prices are not just important for Inflation targeting of the central bank, but most probably have direct positive implications for farmers and food production in the country.

High impact of food prices on CPI, accompanied by food price volatility seriously hampers conduct of Inflation targeting of the central bank. In such circumstances it is hard to make credible inflation projections, inflationary expectations may be adversely biased, and confidence of general public in the central bank may be compromised. All of this seriously deteriorates chances of success of Inflation targeting. Serbia has experienced recently a detrimental short term impact of food price shock on inflation. At the same time there is a number of possible improvement concerning food prices, its volatility and impact on headline inflation in Serbia. Successful improvements in these areas would significantly raise the chances of successful implementation of Inflation targeting in the country.

8 Tariffs for import of agricultural products from the EU have been lowered starting January 1st 2014, but for non EU countries remain relatively high according to the Decision on Food import tariffs (Official Gazette of Republic Serbia, no. 113/2013), available at: www.carina.rs/lat/Zakoni/lat-ODLUKA%20o%20odredjivanju%20pp%20proizoda%20za%20koje%20se%20placa%20posebna%20dazbina.pdf

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UTICAJ CENA HRENE NA INFLACIJU: SLUČAJ SRBIJE

***Dejan Šoškić*[9]**

Sažetak

Cene hrane tradicionalno utiču na inflaciju u čitavom svetu. Promene u ovim cenama uglavnom dolaze zbog promena u ponudi, a manje zbog promena u tražnji. Ako se tretiraju kao šok *ponude, monetarna politika na njih ne treba da reaguje. Ipak, cene hrane su deo zvanične inflacije* čiji se nivo *zvanično cilja od strane većine centralnih banaka. Srbija zvanično sprovodi Ciljanje inflacije i suočena je sa ozbiljnim izazovima uzrokovanim nestabilnošću cena hrane. Nestabilnost cena hrane u Srbiji otežava projekcije buduće inflacije, i može imati negativan uticaj na inflaciona očekivanja i poverenje javnosti u (tj. kredibilitet) centralne banke, a sve to je od izuzetnog značaja za uspeh Ciljanja inflacije. Postoji nekoliko važnih i mogućih poboljšanja koja mogu da smanje nestabilnost cena hrane i ograniče negativan uticaj nestabilnih cena hrane na indeks potrošačkih cena (IPC) kao meru inflacije. Ova poboljšanja su vrlo važna za uspeh Ciljanja inflacije u Srbiji.*

Ključne reči: *cene hrane, ciljanje inflacije, cenovna nestabilnost, Srbija.*

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ATTITUDES TOWARD FARM ANIMALS WELFARE AND CONSUMER'S BUYING INTENTIONS - CASE OF SERBIA

Saša Veljković[1], Žaklina Stojanović[2], Jelena Filipović[3]

Summary

The aim of this study is to examine consumers' perception of the products considering animal welfare and to establish the factors which affect consumers' willingness to pay the premium price for the animal-friendly products. In addition, four consumers' profiles according to their attitudes towards farm animals' welfare are distinguished and their features are elaborated. The research has been undertaken in Belgrade, comprising 198 participants. The face-to-face interview technique has been adopted, while for the analysis of the results regression and cluster analyses have been performed. The findings suggest that food sector stakeholders should put more efforts in providing information and education to the consumers regarding the importance of animal welfare and that there is a significant market potential for the introduction of the label for animal-friendly products. The implications for policy makers are proposed and discussed too.

Key words*: animal welfare, consumers, market segmentation, food, Serbia.*

JEL: *I31, M31, Q13*

Introduction

Food labelling addresses a set of issues on consumer information. The innovative animal welfare labelling and consumer attitudes toward farm animals' welfare are in the focus of our research. Animal welfare (AW) is strongly linked to agricultural practices. Due to population growth, agricultural producers all over the world have been constantly forced to increase supply. Consequently, agribusiness sector stakeholders have been obliged to apply innovative and highly productive methods commonly marked as

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the *Green revolution package*. However, the Revolution led to the numerous hazards related to land use, quality of environment and human health (Zakić, Stojanović, 2008).

Starting from 1990s the set of agricultural policy measures has been designed to redirect overall public support from the pure efficiency approach toward production of high value added food. AW is usually treated as the societal and consumer concern. From the social point of view, specific AW food labels appeal to a wider public, and include specific ethics considerations. On the other hand, consumers are particularly concerned about the way animals have been treated on the farm. However, the conducted studies failed to explain why consumers in general are not empowered to respond to higher AW standards. Previously mentioned facts indisputably approve the importance of the research related to the explanation of consumers' attitudes toward AW. It is also important to notice that the AW market is emerging regardless of the geographical scope, and research in both developed and developing countries are of particular interest to wider public (namely, consumers, food companies, retailers, food sector stakeholders in general, and public policy makers). They are highly interested in the specific results and recommendations obtained from the innovative AW research.

As far as Serbia is concerned, the AW issues can be observed strictly from the normative point of view. *The Food Safety Law* was adopted in 2009 (Official Gazette, no. 41/2009). The law provisions provided the overall framework for the legislative related to food labelling in general, including AW issues. Under the accession and related harmonization processes, *the Law on Animal Welfare* was adopted by Serbian parliament simultaneously with *the Food Safety Law* (Official Gazette, no. 41/2009). However, the legislative simply push producers to improve their technology without any attention paid to consumer awareness and attitudes toward specific AW issues. The main objective of this paper is to elaborate the first findings related to connections between consumers' attitudes toward AW and buying intentions in our country. The main research questions are defined as follows: (RQ1) Do respondents have positive attitudes to AW concept in general?; (RQ2) Which variables best explain the respondents' willingness to pay a premium price for AW products?; (RQ3) Who are the early adopters at the market - or which clusters according to the consumer's intended behaviour towards AW products can be identified at the emerging Serbian market?

Theoretical background and literature review

In the last two decades the topic of consumers' food choice has drawn a lot of attention, both by the scholars and by the practitioners. Given the multidimensional nature of the subject, research has focused on manifold aspects which determine consumers' food selection, such as: food attributes (e.g., healthiness, appearance, nutritional values), consumers' characteristics (demographic, economic, social, psychological, etc.), features of the point of food purchase (e.g., availability, package), etc. The most recent research matters that have been investigated in this sphere are ethical concerns – widely recognized as highly influential group of determinants of consumers' purchase behaviour (Steptoe et al., 1995). However, the consumer concerns about AW and the

impact on food choice have been distinguished by the scholars quite recently, and therefore, they yet need to be studied more thoroughly.

Given that the introduction of the higher AW standards will induce the increase in costs of the supply-chain participants, it is very important to establish whether consumers are willing to pay more for certified animal-friendly products. Previous studies conducted on this matter revealed ambiguous findings. For example, Nocella and associates (2010) determined a positive relationship between consumers' willingness to pay and animals-friendly certification, while Theuvsen and associates (2006) failed to prove the same. More precisely, it is concluded by several studies (e.g., Napolitano et al., 2008; European Commission, 2009) that consumers claim to be willing to pay more for the food produced in accordance with farm AW, however, they do not translate that intention into practice at the point of purchase. Some studies (e.g., Harper, Henson, 2001) acknowledged that consumers did not perceive AW to be directly correlated with their health or convenience, and thus it was not a priority for them when making a purchase.

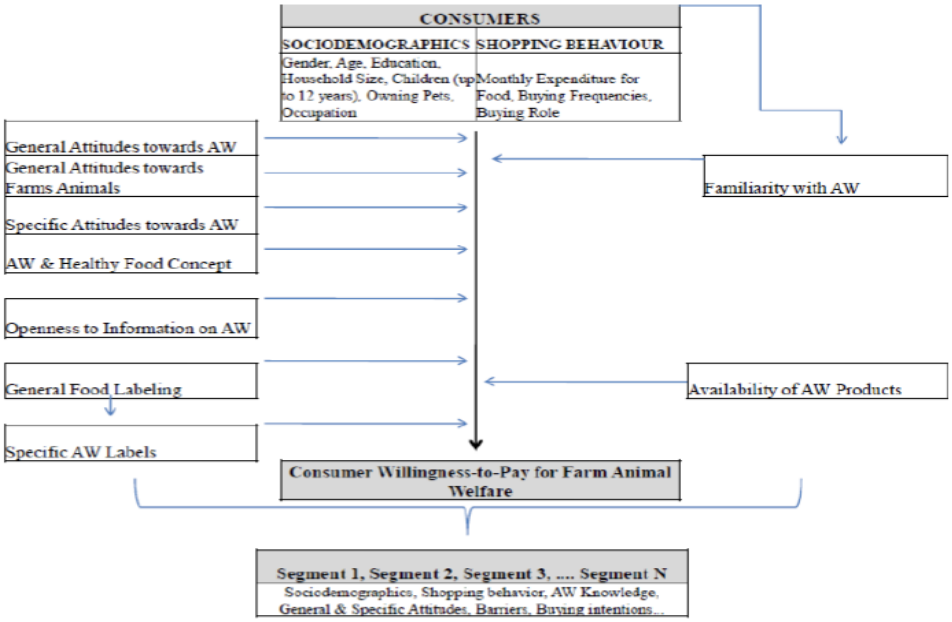
Nevertheless, several factors demonstrated to be significant for the extent of the consumers' willingness to pay for animal-friendly products. In line with the attributes that affect consumers' purchase decisions of specific food categories, such as: functional food (e.g. Filipovic, Stojanovic, 2013), organic food (e.g. Shih Jui et al., 2015) or fair-trade products (e.g. Pelsmacker et al., 2006), the body of subject literature indicates that they also determine the willingness to pay for products labelled with AW. The most prominent variations determinants are established to be socio-demographic factors. Previous research (Lagerkvist, Hess, 2011, Kehlbacher et al., 2012; Grimsrud et al., 2013) consistently acknowledged that age, income, gender and the level of education played significant role in the distinguishment of consumers' willingness to pay for animal-friendly products. In addition, the presence of children in the household (Toma et al., 2012), as well as whether family owed a pet (Harper, Henson, 2001), influenced how prone they would be to pay premium price for products which considered animal welfare.

Besides socio-demographic characteristics, consumers' willingness to pay for the subject products is determined by their knowledge and beliefs. As proposed by Boogaarda and associates (2006), consumption of animal products should be observed from the perspective of values, convictions, emotional experiences (with animals and farms) and factual knowledge on farm animals' treatment. In addition, it is also claimed that self-rated knowledge and level of concern for AW influenced consumers' willingness to pay (Taylor, Signal, 2009). However, the findings on the relations of consumers' willingness to pay and their knowledge and beliefs are rather equivocal; given that consumers' level of informativeness and extent of their concern for AW do not always change in opposite directions (Belegu et al., 2014). In fact, individuals can hold two views on AW. On the one hand, as the society members, they may support the notion of animals being entitled to a good life, but as consumers, they can avoid the cognitive connection with the live animal (Schröder, McEachern, 2004).

Taking all of these into considerations, this research aims to ascertain the features which influence consumers' willingness to pay for animal-friendly products; and to indicate consumers' segments, with respect to these products, in Serbia. Previous research (Ingenbleek et al., 2013) showed great disparities between European countries with regard to animal-friendly products, noticing that the European market is still largely fragmented and those different national markets, due to their peculiarities, should to be investigated on this matter. This study helps the global discussion on the consumers' perception and behaviour related to farm AW and represents one of the first studies in this domain in Serbia.

Based on all mentioned above, the research model is designed as follows (Figure 1).

Figure1. Proposed research model



Source: Authors' model based on the literature review and previous research.

The research methodology and data

In the analysis conducted by Redmond and Griffith (2003), it was established that the method of interviews was the most widely used one for the investigation of the matters related to the consumers' food safety. Authors used face-to-face interviews in their studies in order to explore attitudes, preferences on purchasing intentions and consumer behaviour in the field of animal-friendly products (Vecchio, Annunziata, 2012; Toma et al., 2011).

Our survey of consumer attitudes of the impact of farm animals' welfare on food quality and safety was conducted in April 2014, in Belgrade. The survey included 198 respondents, aged 18 and above, both males and females (Stojanović et al., 2014a). A method of interception interview in front of previously mapped retail stores was implemented. Different retail

formats were included, ranging from the mini-markets to the large supermarkets in the shopping malls. A structured questionnaire was used to collect data on the level of awareness and knowledge of the respondents, and their attitudes towards the welfare of farm animals and animal-friendly products.

Assessment of the knowledge. Knowledge scale was used in measuring knowledge about AW practice. There were 5 multiple answers related to this issue. For each correct answer a score of one point was given, and a score of zero point for incorrect answer. A cut off point for low knowledge was 2.5 score and a score of 2.51 points or more was given for higher knowledge. Questions were related to the practical aspects of farm animals breading and the legislative in the field of research in Serbia (Stojanović et al., 2014b). Respondents, regardless of the conducted test, had the opportunity to provide a self-assessment of their knowledge of farm animal treatment.

Measurement of attitudes. Respondents were asked to provide a self-report on their attitudes towards AW. Attitudes were examined using a seven-point Likert scale. The most of the statements are defined taking into account the previously conducted research in this area (Vecchio, Annunziata, 2012; Matsuoka, Sorenson, 2013). Respondents were requested to indicate general and specific attitudes towards the welfare of animals, as well as the attitudes associated with AW labelling, the availability of such products and willingness to buy them.

Socio-demographic and buying behaviour characteristics. The general socio-demographic characteristics of the respondents were collected at the end of the interview. They are referred to the usual data such as: gender, age, level of education, household size, occupation, number of children, household income, owning pets, etc. Data on the characteristics regarding purchasing behaviour were related to: the monthly expenditure for food, buying frequencies of a specific food, and personal role in purchasing of food (major buyer in the family or not).

All questionnaires were checked for completeness and validated. Data analysis was conducted using SPSS software version 20.

Analysis is performed in several phases. Firstly, the basic descriptive statistical analysis and correlations are displayed and calculated. These basic statistical analyses are used to provide indications of the degree of association between two or more factors. In the second phase, linear regression analysis is performed, aiming to determine which factors dominantly influence respondents' willingness to pay higher prices for animal-friendly products. Extracted variables based on the regression analysis, were used as the baseline to distinguish segments with Ward's method of Hierarchical cluster analysis. In the last phase of the analysis, the segments are profiled using ANOVA statistics for analysis of variance comparison of means, and bivariate analysis including cross-tabulation with $\chi 2$ (Chi-squared) statistics and independent samples t-test. Statistical significance is assessed using p-values and all results were considered significant at the level of $p < 0.01$, $p<0.05$, or $p<0.1$.

Research results and discussion

Sample characteristics and exploratory analysis

In the Table 1 can be observed socio-demographic and other sample characteristics. 62.1% of the respondents are females; 53.6% are aged between 31 and 60; 53% completed secondary school, and 30.8% obtained BSc degree. Households consisting of four members are most frequent (42.4%) in our sample. Approximately half of the respondents (51%) spend monthly between 20,000.00 and 39,999.00 RSD on food. The other sample features that should be noticed are: 45.5% are pet owners; 43.4% are major shoppers in the household; 30.3% are parents of the children under 12 years old; and 75.3% visited a farm at least once.

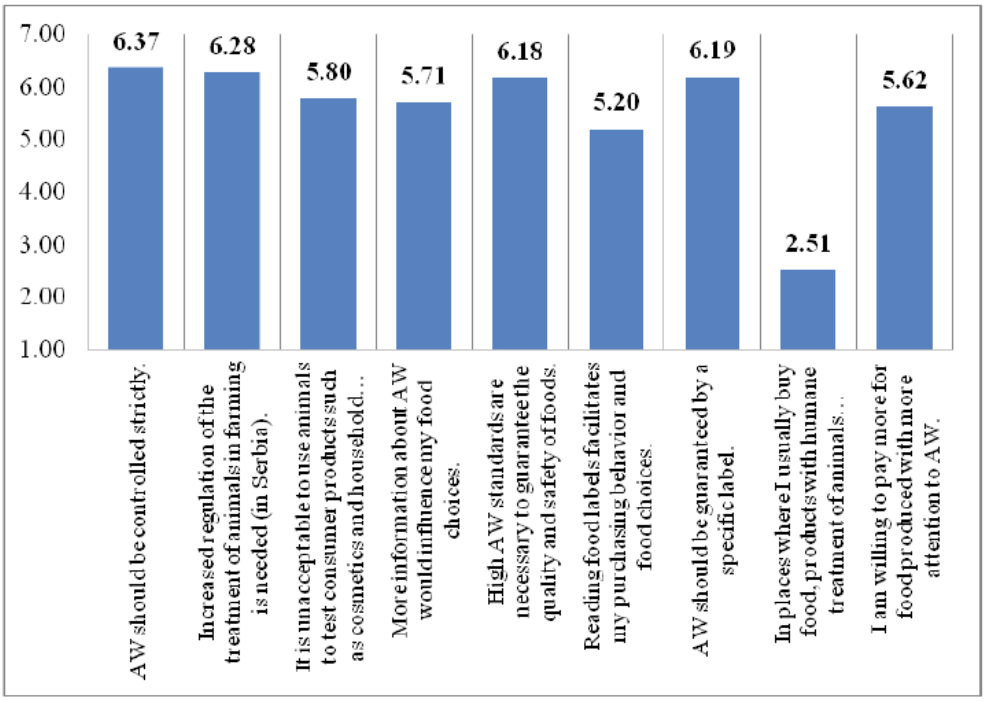
Table 1. Sample characteristics

Characteristics	Sample (n=198)	Percent	Characteristics	Sample (n=198)	Percent
Gender	Female	62.1	Monthly Expenditure for Food	up to 10.000 RSD	3.5
	Male	37.9		10,000 to 19,999 RSD	20.2
Age	18-30	31.3		20,000 to 29,999 RSD	27.3
	31-45	26.8		30,000 to 39,999 RSD	23.7
	46-60	26.8		40,000 to 49,999 RSD	17.2
	over 61	15.2		over 50,000 RSD	7.6
Level of Education	Primary school qualifications	2.5		Missing	0.5
	Secondary school qualifications	53	Household Income	no income	1
	Two-year post-secondary school qualifications or BA	13.6		up to 20.000 RSD	1.5
	Bachelors' degree (BSc)	30.8		20,000 to 39,999 RSD	15.7
Household Size	1	6.1		40,000 to 79,999 RSD	38.9
	2	18.7		80,000 to 119,999 RSD	22.7
	3	19.2		over 120,000 RSD	12.6
	4	42.4		no answer	7.6
	5	7.6	Owning Pets	Yes	45.5
	6.00 and over	4.5		No	54.5
	Missing	1.5	Respondent is a Major Shopper	Yes	43.4
Number of Children (up to 12 years)	0	68.2		No	27.8
	1	20.2		Members participate equally in the purchase	28.8
	2	10.1	Respondent Visited the Farm	Yes	75.3
	Missing	1.5		No	24.7

Source: Authors' calculations according to data from Stojanovic et al., 2014c.

The research is exploratory in its nature. The sample is not statistically representative for the country. It represents only buyers who prefer buying in different retailers formats in the capital (from the shopping centres to the small shops in the neighbour). Additionally, the presence of different categories of respondents allows us to implement appropriate statistical and logical analysis, highlighting the first results and elaboration of findings related to consumer behaviour toward AW products in Serbia. From the theoretical point of view, our research aims to elaborate the main factors influencing the consumers buying intentions regarding AW products, as well as to identify the first predictors for early assessment of the consumer group that is most willing to pay higher premium for AW products in Serbia.

Figure 2. Respondents' attitudes toward animal welfare



Source: Authors' calculations according to data from Stojanovic et al., 2014c.

The highest level of the agreement respondents express to the claims concerning the control and regulation of AW. On Figure 2 is noticeable that most of the other statements concerning the general and specific aspects of AW and labelling achieved higher agreement scores (>5.20 on 1 to 7 Scale). The claim regarding the availability of the products manufactured in accordance with AW concept is evaluated significantly below average.

Correlation analysis showed a statistically significant correlation ($p < 0.05$) between the consumers' willingness-to-pay premium price and all presented statements regarding AW (see Table 2).

Table 2. The correlation between the willingness-to-pay premium price and attitudes regarding AW

I am willing to pay more for food produced with more attention to AW.	Attitudes	Increased regulation of the treatment of animals in farming is needed (in Serbia).	AW should be controlled strictly.	It is unacceptable to use animals to test consumer products such as cosmetics and household detergents.	More information about AW would influence my food choices.
	Pearson Correlation	.367**	.251**	.200**	.435**
	Sig. (2-tailed)	0	0	0.005	0
	N	196	196	195	194
	Attitudes	AW should be guaranteed by a specific label.	High AW standards are necessary to guarantee the quality and safety of foods.	In places where I usually buy food, products with humane treatment of animals' certificate are available.	Reading food labels facilitates my purchasing behaviour and food choices.
	Pearson Correlation	.481**	.491**	.146*	.224**
	Sig. (2-tailed)	0	0	0.042	0.002
	N	196	196	196	194
**. Correlation is significant at the 0.01 level (2-tailed).					
*. Correlation is significant at the 0.05 level (2-tailed).					

Source: Authors' calculations according to data from Stojanovic et al., 2014c.

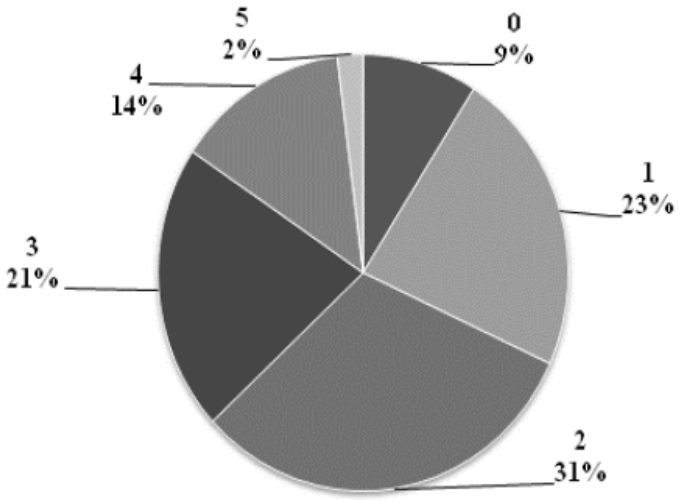
In our analysis we observe two groups of respondents regarding their role in family purchase - consumers stating to be the main buyers of food in the household and other. For the most of the statements regarding AW T-test shows statistically significant differences depending on the role of the respondents when buying food:

- AW should be controlled strictly ($p < 0.05$);
- It is unacceptable to use animals to test consumer products such as cosmetics and household detergents ($p < 0.1$);
- More information about AW would influence my food choices ($p < 0.05$);
- Reading food labels facilitates my purchasing behavior and food choices ($p < 0.01$);
- AW should be guaranteed by a specific label ($p < 0.1$);
- I am willing to pay more for food produced with more attention to AW ($p < 0.01$).

The research goal was also to find out whether respondents differ in terms of attitudes towards AW depending on their knowledge regarding the animal friendly practices and products. Respondents were asked to provide self-assessment of knowledge regarding AW. Most of the respondents stated that they were not adequately informed about how animals were treated on the farm (85.3%). If we consider the subjectively assessed knowledge

(respondents who stated that they sufficiently know about AW vs. those who reported not to know about AW at all), a t test failed to reveal a statistically reliable differences ($p>0.1$). In addition, we tested the respondents' objective knowledge of AW and legislation in the field of research. The questions referred to the methods of animal breading and their impact on the health of animals and humans. Additional two questions were related to the Law on Food Safety and Animal Welfare Act in Serbia. Results of testing knowledge in the field of AW are given in the Figure 3.

Figure 3. Demonstrated knowledge about the treatment of farm animals (share based on the number of correct answers)



Source: Authors' calculations according to data from Stojanovic et al., 2014c.

Demonstrated knowledge about the treatment of farm animals was very poor. Only 2% of respondents answered correctly to all five questions. Another 14% of them provided correct answers to four questions. Majority (54%) of the respondents answered correctly only to one or two questions regarding the treatment of animals and legislation.

If we observe statistically significant differences between respondents who showed better objective knowledge (answered correctly to more than a half of the questions) compared to those who knew less (answered correctly to one or two questions), t test confirmed the statistically significant difference for two AW claims:

- Reading food labels facilitates my purchasing behaviour and food choices ($p<0.1$);
- In places where I usually buy food, products with humane treatment of animals certificate are available ($p<0.05$).

AW and Purchasing behaviour

A multiple regression analysis is performed in order to assess the purchase intentions (*Consumer Willingness-to-Pay for Farm AW*) relative to eight explanatory variables (*consumers' general attitudes towards AW*; *consumers' general attitudes towards the welfare of farms animals*; *consumers' specific attitudes towards AW*; *openness to the information on AW*; *AW as a guarantee of healthy food*; *influence of food labels on consumers'purchasing behaviour*; *consumers'attitudes towards the AW labels*; *availability of the AW products*). The used predictors have been widely employed in the body of the subject research and proved their explanatory capacity. However, Serbian market of the AW products is emerging, and therefore, the AW products availability is included in our analysis as the additional predictor of consumer behaviour.

In the structural element of the model, the regression parameters explaining purchase intentions indicate that four variables have a significant influence on the dependent variable: *attitudes of consumers towards AW labels*, *AW as a guarantee of healthy food*, *openness to information on AW*, and *availability of AW products*. This multiple regression accounted for 37.4% of the variability, as indexed by the adjusted R^2 statistic (38.7% indexed by the R^2 statistic).

The regression equation for predicting *Consumer Willingness-to-Pay for Farm AW* is:

$$y= 0.375x_1 + 0.306x_2 + 0.229x_3 + 0.115x_4 - 0.182$$

Where:

x_1 - *attitudes of consumers towards the AW labels*

x_2 - *AW as a guarantee of healthy food*

x_3 - *openness to information on AW*

x_4 - *availability of AW products*

The variable *Attitudes of consumers towards the AW labels*, as indexed by its β value of 0.375, shows the strongest relationship to Consumer Willingness-to-Pay for Farm AW. Consumers' decisions are highly influenced by labels made on foods. However, other three drivers have recorded significant positive effect on AW products purchase intentions in our sample.

Consumers' general attitudes towards the AW, *consumers' general attitudes towards the welfare of farmed animals*, *consumers' specific attitudes towards the AW*, and *general attitudes toward food labels* are not revealed to be the significant factors of influence in determination of consumers buying intentions. When it comes to the health as the main reason for purchase of AW products, our respondents simply observe the products characteristics and high added value only in the context of health self-assessment. If the relationship between personal health status (or health status of the family) and products produced using the animal friendly practices is visible, than consumers express more openness to the AW products. Openness also includes the willingness to obtain new information regarding the

AW products and practices. Finally, willingness to pay premium prices for AW products depends on products availability on the market.

Cluster analysis

Our research is oriented toward explanation of main differences between identified consumers groups. Cluster analysis allows deeper insight in consumer willingness to pay for AW products. Furthermore, it facilitates set of conclusions relevant both food industry and policy makers in Serbia.

A segmentation of the sample is conducted to verify the existence of homogeneous groups of the respondents in terms of attitudes to AW and willingness to pay for it. For this purpose, cluster analysis is applied as a common technique used in similar studies (Vecchio, Annunziata, 2012; Krystallis et al., 2012). Hierarchical Cluster Analysis (Ward's Method) is performed to obtain segments. The variables used to divide the sample into clusters were: attitudes of consumers towards the AW labels, AW as a guarantee of healthy food, openness to information on AW, and availability of AW products. These variables were selected as key predictors in the regression model. Consequently, the fifth input value for the cluster analysis was the dependent variable of the regression model (Consumer Willingness-to-Pay for Farm AW). The division into four groups was optimal, given the sample size, homogeneity within segments, and heterogeneity between segments. Detailed characteristics of clusters can be observed in Annex.

Cluster 1: Indifferent. The first group of consumers forms 35% of the sample. Comparing with other identified consumer groups, *indifferent* don't take care about AW claims, or at least, they are not interested in it. They express more positive attitudes toward AW concerning socially accepted norms. However, *indifferent* consumers are not generally willing to pay higher prices for AW product. Only Cluster 4 exhibits lower willingness to pay for selected food than Cluster 1. Concerning socio-demographics, males are overrepresented in the group. Household size of this cluster is the largest in the sample, and consequently the monthly expenditures for food are the highest in comparison to other consumer groups. Moreover, this cluster is ranked first by the purchases frequency. Respondents from Cluster 1 are above average in preferring family shopping – family members participate equally in the purchase. Finally, significantly higher share of young and business oriented consumers are noted in this group: 60% of entrepreneurs, 49% of students, and 43% of managers in the sample belong to Cluster 1.

Cluster 2: Seekers. Cluster 2 (25% of the sample) is AW oriented in general. This can be seen by the attitudes to AW, and willingness to pay premium prices for AW products. However, in most of the statements, according to the average score, they are lagging behind the third cluster. What makes the members of this segment specific is consumers' knowledge of where they could find and buy AW products. This is the result of their life experience (oldest segment in sample). The cluster consists of the large number of pensioners and unemployed. Their interest in AW is guided primarily by health reasons, or by the fact that they are limited by income. The lack of 'the economic power' is evident in this group. Consequently, although more than half of them are in the role of major buyers in their

homes, the lowest monthly expenditures for food is recorded in this group comparing to other three clusters in the sample.

Cluster 3: Believers. The Cluster 3 (30% of the sample) was truly interested in animals and their welfare. Members of this cluster have declared the most positive attitudes toward all claims related to AW. Members of the Cluster 3 highlight the availability of animal-friendly products as the major barrier for higher consumption of the AW products. According to the number and relative participation, females are most represented in this cluster. They keep the role of the "household gate keeper" as they declared to have the main buyer role in their households (major shoppers are nearly 3 out of 5 respondents in this cluster). Almost 40% of the employed respondents belong to this segment. *Believers*' spending on the food and the frequency of purchase of chosen product are almost identical to the sample's corresponding means.

Cluster 4: Antagonists. Members of the fourth segment (10% of the sample) are antagonistic toward the AW. They do not see any reason to pay a premium price for AW products. They are against every specific AW labelling of food. Even when it comes to people's health, they do not perceive any connections between personal health and AW concept. *Antagonists* are not ready to follow the labels on welfare products. They are even not open to receive any information about AW. The groups of youngest respondents and females are overrepresented in this cluster. In the context of purchase, below average household food expenditures and higher share of persons not involved in the purchase of food in the household are reported in this group.

Conclusions and recommendations

The main conclusions are presented in the form of the answers to previously defined research questions. The conclusions are derived from the results obtained by the primary research conducted in Belgrade in 2014. Sample size allows us making recommendations based on the capital city consumer behaviour toward AW. The results presented in this study are relevant for the wide group of agricultural sector stakeholders - farmers, food companies, retailers and policy makers in Serbia. The results are also valuable in the context of the theoretical explanation of the main drivers of consumers' willingness to pay premium prices for the AW labelled products.

Regarding the consumers attitudes toward AW concept in general, our research ascertains socially acceptable consumer behaviour. Consumers generally argue about their high awareness towards this issue. From the legislative point of view, they are aware of the fact that AW should be strictly regulated and controlled in the country. Furthermore, they request an increase of the regulation of the animal's treatment at the farm. They simply relay on the state/administrative procedures in the food quality assurance. In the practice, rather low awareness exists. The conclusion is derived by cross-section analysis of specific knowledge and information regarding AW. For example, our respondents are not generally aware of the relations between the AW and personal and public health. They are also poorly informed about AW issues in Serbia. Hence, it is noticeable that respondents' attitudes have been strongly

influenced both by poor knowledge and information regarding AW, and high pressure of international adjustments of the regulations and laws in the country.

Generally, pure administrative approach to the AW issues is evident. It leads us to the conclusion that Serbia essentially misses demand derived factors that might influence the greater acceptance of the AW products in the practice. The public health policy makers should launch a study to map the current AW education and information activities directed at the general public and consumers in Serbia, which is a prerequisite for further AW products market development. The EU officials also insist on trans-national information campaigns or educational initiatives on AW (European Commission, 2012). However, producers who want to apply the EU standards in the practice will be faced with a change of their production methods which, among others, includes implementation of AW standards as well.

Furthermore, a multiple regression analysis confirms that purchase intentions (Consumer Willingness-to-Pay for Farm AW) are defined by following variables: consumers' attitudes towards the AW labels, the AW concept as a guarantee of healthy food, openness to the information on AW and availability of the AW products. Consumers who are at the moment ready to pay premium price for animal-friendly products are generally guided by the labels made on food and by their perception of the direct correlation among agricultural practices, AW and consumer health. They are open to new information regarding the AW concept and they highly appreciate availability as the significant factor of purchasing intentions. In our study availability is defined as the purchasing convenience (the products I want *to buy* are available at the place *where* I regularly shop). The main drivers for better acceptance of AW products at the market are partially derived by the food industry behaviour related to labelling and availability of AW products, and partially by wider public action regarding consumers' information on overall AW importance. From the theoretical point of view, these factors should be more exploited in the further research of consumer willingness to pay for AW products at emerging markets.

When it comes to farmers and food industry interests, they are extremely focused on the results of the early adopters' identification. The most interesting market segment is identified as *Believers*. They are more social in nature than average, since they believe in generally accepted social norms. They are completely open for new information on products label - particularly connected with the personal and family health status, and are the best class of word of label. They are overrepresented by the mothers as the household gate keepers. This segment consists of almost every third respondent in our sample. However, the results should be exclusively interpreted and valid for the food market in the capital city, where the potential for AW products acceptance is the highest in comparison to other regions. The potential consumer group that should be also took into consideration and targeted by the business sector is *Indifferent*. It consists of consumers dedicated to the new and modern life style. In the transition societies this group of consumers acts slightly different than in the developed countries. Their food habits are dominantly distorted by modern managers, entrepreneurs or younger population way of life. However, they have registered higher expenditures on food consumption in our sample. Changing of the life style should be also facilitated by the

officials who should take more care about the overall health status of the population.

Finally, the research faced some limitations. First of all, sample size is rather small and not representative nationwide. Second, we are aware of the limitation that the answers of the surveyed respondents regarding AW concept could be "socially desirable" by their nature, and not reflect the real attitude of the respondents. Additionally, the survey was conducted in the period of economic crisis, the stage generally characterized by the decline in consumers' standard of living and consumption. Eventually, buying intention, as the most of previously conducted studies confirmed, have to be converted into actual purchase behaviour. However, despite these limitations, our study gives early evidence on possibilities of AW product market development in Serbia and recommendations for both food chain stakeholders and policy makers responsible for the further AW product market development.

ANNEX

Table 3. Cluster profiles in terms of attitudes towards AW and certain socio-demographic characteristics

Ward Method		Consumer Willingness-to-Pay for Farm AW	General Attitudes of Consumers towards AW	General Attitudes of Consumers towards the Farms AW	Specific Attitudes of Consumers towards AW	Openness to Information on AW	Attitudes of Consumers towards the AW Labels	AW as a Guarantee of Healthy Food	Availability of AW Products	Influence of food labels on purchasing behaviour	Age	Household Size	Number of Children
Sig. (ANOVA calculated)		Yes (p<0.01)	Yes (p<0.01)	Yes (p<0.01)	Yes (p<0.05)	Yes (p<0.01)	Yes (p<0.01)	Yes (p<0.01)	Yes (p<0.01)	Yes (p<0.01)	Yes (p<0.05)	Yes (p<0.1)	No
Indifferent (35.1%)	Mean	**4.96**	**5.94**	**5.99**	**5.54**	**5.1**	**6.24**	**5.59**	**1.76**	**5.21**	**38.26**	**3.76**	**0.45**
	N	68	68	68	67	68	68	68	68	68	68	67	67
	Std. Dev.	1.27471	1.39168	1.17807	1.86132	1.60354	0.89971	1.43761	0.9323	1.46153	14.89728	1.33813	0.70245
Seekers (25.3%)	Mean	**6.35**	**6.67**	**6.51**	**5.84**	**6.16**	**6.14**	**6.8**	**5.16**	**5.33**	**45.27**	**3.17**	**0.48**
	N	49	49	49	49	49	49	49	49	49	49	48	48
	Std. Dev.	0.92536	0.80072	0.98155	2.07512	1.28041	1.38444	0.49915	1.51859	1.98313	15.16956	1.17298	0.74347
Believers (29.9%)	Mean	**6.84**	**6.81**	**6.76**	**6.24**	**6.81**	**6.9**	**6.91**	**1.29**	**5.5**	**43.9**	**3.35**	**0.35**
	N	58	58	58	58	58	58	58	58	56	58	57	57
	Std. Dev.	0.36523	0.47598	0.53999	1.54818	0.51151	0.3072	0.28312	0.6215	2.02709	14.96978	1.23189	0.58221
Antagonists (9.8%)	Mean	**2.37**	**5.74**	**5.26**	**5**	**3.21**	**3.95**	**4.26**	**2.05**	**3.79**	**38.16**	**3.42**	**0.37**
	N	19	19	19	19	19	19	19	19	19	19	19	19
	Std. Dev.	1.30002	1.36797	1.72698	1.73205	1.47494	1.39338	1.88096	1.35293	2.32329	18.05936	1.30451	0.68399
Total Average	Mean	**5.62**	**6.37**	**6.28**	**5.77**	**5.7**	**6.19**	**6.16**	**2.51**	**5.18**	**41.71**	**3.46**	**0.42**
	N	194	194	194	193	194	194	194	194	192	194	191	191
	Std. Dev.	1.65991	1.12212	1.14033	1.84556	1.65566	1.27006	1.36963	1.89966	1.91251	15.52238	1.27604	0.6747

Source: Authors' calculations according to data from Stojanovic et al., 2014c.

Table 4. Cluster profiles in terms of socio-demographic characteristics and shopping behavior

Ward Method	Gender	Occupation	Frequency of buying Eggs	Monthly Expenditure for Food	Whether respondents are the main persons responsible for buying food?
Indifferent (35.1%)	M-50%, F-50% (46% of men in the sample belong to this cluster)	Although in this segment is the most workers, it should be noted that: 60% of entrepreneurs, 49% of students, and 43% of managers in the sample belong to segment 1	Most often buying eggs (minimum once a week - 79.4%)	The biggest spenders (60.2% over 30.000 RSD per month)	Members participate equally in the purchase - 38%
Seekers (25.3%)	Average gender distribution (F-63.3%, M-36.7%)	35% of pensioners, 31% of unemployed, and 27% of workers in the sample belong to segment 2	Average buyers (minimum once a week - 61.3%)	Minimum spend for food (64.6% below 30.000 RSD per month)	Major buyers - 53%
Believers (29.9%)	Predominantly female cluster (F-72.4%, M - 27.6%)	38% of workers, and 32% of pensioners in the sample belong to segment 3	Average buyers (minimum once a week - 62.1%)	Average spending (50% below, and 50% over 30.000 RSD per month)	Major buyers - 57%
Antagonists (9.8%)	Above average female cluster (F-68.4%, M-31.6%)	17% of students, and 29% of managers in the sample belong to segment 4	Rarest buying eggs (only 42.1% minimum once a week)	Below average spending (63.2% below 30.000 RSD per month)	Not frequently involved in buying food for household - 53%
Total (Sample)	Female 61.9%, Male 38.1%	Students - 18%, entrepreneurs - 8%, workers - 42%, managers - 7%, unemployed - 8%, pensioners - 16%	Minimum once a week - 66%	Below 30.000 RSD per - 51.2%, and over 30.000 RSD per month - 48.8%	Major buyers - 43%; Not frequently involved - 28%; Members participate equally - 29%
Chi-Square Tests	(Sig. $p<0.01$)	(Sig. $p<0.1$)	(Sig. $p<0.05$)	(Sig. $p<0.01$)	(Sig. $p<0.01$)

Source: Authors' calculations according to data from Stojanovic et al., 2014c.

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STAVOVI PREMA DOBROBITI FARMSKIH ŽIVOTINJA I KUPOVNE NAMERE POTROŠAČA – PRIMER SRBIJE

Saša Veljković[4], Žaklina Stojanović[5], Jelena Filipović[6]

Sažetak

Cilj ovog istraživanja je da se ispita percepcija potrošača u pogledu prehrambenih proizvoda povezanih sa dobrobiti farmskih životinja; kao i da se utvrdi faktori koji utiču na to da potrošači plate premijumsku cenu za navedene proizvode. Četiri segmenta potrošača su identifikovana, na bazi njihovih stavova prema dobrobiti životinja i njihove karakteristike su detaljno objašnjene. Istraživanje je sprovedeno u Beogradu na 198 ispitanika, tehnikom ličnog intervjua. Za analizu rezultata korišćeni su metodi regresione i klaster analize. Rezultati pokazuju da prehrambeni sektor treba da uloži više napora u informisanje i edukaciju potrošača o važnosti dobrobiti životinja, kao i da postoji značajan tržišni potencijal za uvođenje oznake za proizvode koji su proizvedeni u skladu sa standardima za dobrobit životinja. Implikacije za donosioce zakona takođe su predložene i razmatrane u radu.

Ključne reči: *dobrobit životinja, potrošači, segmentacija tržišta, hrana, Srbija.*

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CLUSTER DEVELOPMENT IN RURAL AREAS

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Summary

The interest in creating a base-line for development patterns of clusters and clusters' specific characteristics in rural areas is particularly imposed by certain problems, which manifest themselves in similar degrees and provide a generic pattern in different regions and countries, e.g. depopulation and land abandonment, unemployment level and insufficient access to basic services and infrastructure. Certain development patterns and priorities are identified in the regional development in the old EU-members, while the member states from the Eastern parts are still partially restricted by their economic situation and political instability. This puts forth the concept of the "integration maturity", which refers to the preparedness of each country and its capability to fully exploit the benefits and the advantages of the integration form (Palánkai, 2003), and is still applicable in terms of the economic convergence level of the new-member states in comparison to the EU-15. This statement is especially relevant to the rural business and development that often remains distant and isolated from capital and sources of information and support. With the consequences of the economic crisis and the ongoing economic instability economists, business experts and social scientists have refined a broad range of techniques for making sense of regional economies and analyzing the public policy implications of their workings. Clusters are therefore often perceived not only as patterns for economic transactions and economic outcomes, but also as social systems and multidisciplinary environmental drivers for change.

Key words: *clusters, shared value, rural areas, rural development.*

JEL: *O18, P25, Q18*

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Introduction

Rural clusters and networks are generally perceived as one of the drivers that lead to renewed economic growth and bring about competitiveness in the less developed areas. Cluster approach through its collaborative and cooperative activities target broad range of economic, social and ecological problems to ensure rural recovery and sustainability and "reinforce the progressive predilection for an economic system that balanced competition with cooperation, individualism with collectivism, and growth with equity" (Rosenfeld, 2009). Recently, clusters have become part of the mainstream of economic development and political agendas, targeting public attention not only to the economic results of the cluster approach, but also as solution to problems related to areas with lower level of education, labour mobility, resources and technology-based growth opportunities. In Europe rural areas are often associated with these problem categories. Policies and relevant development mechanisms have set as a straightforward priority reviving and sustainability of these areas, which are of utmost importance for the future. However, with the economic instability and crisis consequences it became apparent that the rurality suffers the most from the shortcomings in the social, economic and health system.

Rural regions represent up to 90% of the European territory and 54% of its population. Predominantly rural regions in the EU represent 52% of the territory and 23% of the population. In 2010 these regions generated 16% of the total GVA and 21% of the employment (European Commission, 2013). In 2012, 15.6% of EU-27 population was younger than 15 years, the working-age population (between 15 and 64 years) represented 66.6% of the total and elderly people (65 years and above) accounted for 17.8%. Still statistics also report that the share of elderly people has become bigger in all types of regions in relation to both the younger and the working-age population. Predominantly rural regions had the lowest level - 70% of the EU-27 average GDP per capita, followed by intermediate regions (87%). GDP per capita varies greatly at Member State level: the GDP per capita in predominantly rural regions of Bulgaria represented just 28% of the EU-27 average during the period 2008-2010, whereas in the Netherlands it was 148%. Therefore the general promotion of rural development requires effective external inputs to gain sufficient results and capability of further improvements. In this relation **endogenous development** is put forth to emphasize comprehensive local development for human rights advocacy, human development and qualitative progress of living standards based on environmental conservation and sustainable social development. Within these framework inter-industrial relationships through comprehensive utilization of local resources, techniques, industries, human resources, cultures, and networks placing value on mixed economic working situations are needed to promote cooperation between cities and local economy.

All these processes have constantly caused local restructuring in a manner less favourable for the small-scale producers and enterprises, facing the difficulty to gain market spot or access to credit and other financial resources. Their position has even been worsened by acquiring of some specific niche products (in respect to their quality and regional characteristics) by the large companies. Hence, the quality that once was found only in small-scale firms' products could be guaranteed by the quality brands of competitive

enterprises. Many traditional productions that failed to adjust to the new institutional circumstances and to apply new technological strategies ceased their existence. While developing their quality and improving their production technology certain types of productions have experienced a process of de-territorialisation and standardization. Strong regional identity was therefore preserved where local production systems have emerged, based on small-scale production. Specificity of different productions has influenced the institutional measures and initiatives that could be characterized in the light of both localization and broadening of industrial scope. Localization through intensified interaction and cooperation is perceived as a viable strategy of defence.

The creation, and sometimes reconstruction, of rural clusters is almost always built upon existing competencies and connections. Once established, two types of strategies are most often associated with their further development. The first one is "specialization" directly relevant to a particular kind of industry, while the second one is "association" based on the relationships and interactions among local firms. Drivers of cluster change could be summarized in four groups: political, economic, social and technical. The political factors are usually associated with the large consensus between public authorities and private sector representatives; high influence of unions and organizations; promotion of high quality and origin of production; and focus on the environmental policy. The economic factors are mainly related to the long-standing tradition resulting from a large number of local firms; concentration of retail system; and the competitive advantage of local production. Any progress in social or environmental results are the by-product of competiveness-driven initiatives, in most of the cases driven by resources directed toward those results by rural clusters, by recognition of the market value of socially responsible products, or by the explicit purpose of the cluster itself.

Methodology and data sources

The present paper is aimed to set the scene by providing the background information on the rationale, framework conditions and developed understanding on clusters and the shared value concept. Therefore a concise overview of relationships between the theory, cluster-specific framework conditions and rural development will be provided to shed light on what cluster is and where its boundaries lie in view of the emerging problems and social instability to deal with.

The structure of the paper will reflect the theoretical background of clusters, identifying them as certain dynamic social and organizational structures that hold different interlinked innovation stakeholders and tend to develop a set of institutions, networks, trust and shared value. Further the genesis of clusters and their development will be identified as a complex process, often dependent on various and even opposing players, e.g. government agencies, public organizations, different cooperative organizations, financial structures and educational institutions. The way their interaction mechanisms are operationalized, creates different level of competitiveness for the regions and varying capacity to enhance economic growth and social stability. It is therefore necessary to operationalize the cluster concept within the following three components:

- **Business and social value –** anticipating how a degree of change in a social condition will drive profits, through either incremental sales or reduced costs, and linking those benefits to the resources needed to achieve them. It is an iterative process that considers how much social change is needed to unlock business value, strategies for achieving that change, and the possibility of getting others to invest in the initiative;
- **Intermediate measures and track progress –** a road map to monitor the initiative's progress in achieving the targeted social and business benefits. The goal is to validate (or invalidate) the anticipated link between social and business results, see which approaches do and don't work, and refine the initiative accordingly;
- **Shared value produced** – the ultimate social and business benefits helps firms expand to new areas and justify additional investment.

The data involved in the research overview encompasses rural development and its particular characteristics in order to implement the "value-chain" method of mapping clusters. This will allow to identify links between business cluster entrepreneurs, workers and organizations, and also to detect poorer groups within the cluster and to understand the poverty alleviation effects of different categories of firms on its workers. Within these limits certain characteristics appear in the development trends of rurality.

The theory of clusters and social value added

The concept of industrial clusters was first introduced by Alfred Marshall in 1920 (Marshall, 1920). For many years this term had a predominantly theoretical meaning up to the 1990's when the attention of academia was caught again. One of the new occurrences of the term cluster is in the work of Porter (Porter, 1990), as "*a group of close-by, supporting industries creates competitive advantage*". In his next publication on this topic he gives the following definition: "*Clusters are geographic concentrations of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities important to competition*" (Porter, 1998). The author periodically returns to "*his old love*" the concept of clusters, and in 2007, in a new publication, he finally defined the term clusters as "*geographic concentrations of firms, suppliers, support services, specialized infrastructure, producers of related products, and specialized institutions (e.g., training programs and business associations) that arise in particular fields in particular locations*" (Porter, 2007).

Other researchers have also given their contribution towards the definition of the concept of clusters:

- "*Economic clusters are not just related and supporting industries and institutions, but rather related and supporting institutions that are more competitive by virtue of their relationships*" (Feser, 1998);
- "*Clusters can be characterised as networks of producers of strongly interdependent firms (including specialised suppliers) linked each other in a value-adding production chain*" (Roelandt, den Hertog, 1999).

After the year 2000, academic emphasis was focused not as much towards the essence, but rather towards the examination of the characteristics of clusters, the ways of identifying them, as well as their influence on the market environment. Every operating cluster has some common characteristics (Bergman, Feser, 1999):

1. Clusters are managed by entrepreneurs and public subjects;
2. The cooperation and competition are fundamental;
3. Fixed relations between companies and public administration institutions;
4. Cluster is a system where every member is of the same importance;
5. Cluster members have the common technologies, customers, distribution channels or labour markets and human capital.

Development of cluster typology is part of the overall clusters' conceptual development. The Scandinavian school of thought represented by Sölvell et al. (2003) makes an interesting differentiation between static and dynamic clusters. They underline that the evolution of a cluster is directly influenced by the microeconomic environment and the general business environment. A dynamic cluster benefits from strong business environment factors and tends to transform its members into internationally competitive companies, where a static cluster tends to "produce" only locally competitive companies. Enright (2000) identifies in his work four types of clusters:

1. Latent clusters – there is a critical mass of companies in related industries, who can benefit from a cluster, but the link between them is not strong enough to benefit from the co-location factors; usually there is a lack of information about other local companies, lack of trust, no common projects;
2. Potential clusters – we can find the necessary elements for a cluster, but the lack of interaction, or the gaps in the services and information flows impede the cluster development;
3. Policy driven clusters – are supported by the government usually based on other type of factors besides the economic factors; these types of clusters are failures or have a short life cycle;
4. Wishful thinking clusters – are ideal types of clusters, policy driven clusters without any critical mass of companies.

Nowadays, the precise identification of the clusters themselves is of special importance. Attempts in this direction have been made by Porter, as well as other authors (Sölvell et al., 2003). According to the level where the clusters are analyzed, some primary methods of differentiation: national (macro-level), industrial branch (mezzo-level) and firm level (micro-level), can be recognized (Stejskal, Hajek, 2012). The increased interest of society towards clusters is due to a number of reasons, the most important among which are:

- The participants in a given cluster can increase their productivity through their

increased availability for access to production factors, such as human capital, information technologies, etc.;

- The cluster participants themselves have the economic benefit of attracting new participants, and they also facilitate the increase of their competitiveness;
- The presence of clusters formed by firms in a given region makes the planning of specific economic activities easier to accomplish, as well as more accurate predictions with regard to company behaviour.

The development of information technologies allows for the formation of new clusters, the so-called E-clusters (Davidovic, 2014). The factors facilitating their occurrence are numerous, yet macroeconomic policy has a crucial impact on development and growth of clusters, because it determines their main resources and competitiveness (availability of skilled human resources, labour and transaction costs, local market protection, and investment in education, science and research). E-clustering is long-term macroeconomic policy that initiates and pushes founding and development of e-clusters in regions.

What is the common thing between the concepts of clusters and shared value? Firstly, this is the name of Michael Porter. The concept of shared value is based on the so-called theory of corporate social responsibility, which has become very popular since the 1970's. In 2001, the European Commission gave the following definition for corporate responsibility: a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis (Commission of the European Communities, 2001). The term itself, as a concept, "shared value", was introduced by the authors in 2006. According to them, corporate responsibility is based on four primary pillars (Porter, Kramer, 2006):

- Maintaining moral obligations, i.e. achieving company goals by following specific ethical norms;
- Company sustainability – an attempt for satisfying current consumer needs, but not at the expense of future needs;
- License for conducting a specific activity – respecting legal and normative business requirements;
- Building up company's reputation – in terms of consumers, as well as employees and investors.

After five years, in 2011 Porter and Kramer officially introduced the concept with their paper "The big idea: Creating Shared Value" (Porter, Kramer, 2011). In this article, they define Creating Shared Value (CSV) as "creating economic value in a way that also creates value for society by addressing its needs and challenges". Other authors have also attempted to make a contribution towards the development of the concept. Pfizer et al. 'definition of shared value is "innovating to meet society's need and build a profitable

enterprise". One contribution to the field has been made by Pfitzer et al. (2013), which suggest that in order to develop a shared value strategy; companies should follow a five-step guide. The guide, or framework, consists of the following five steps:

- Embedding a social purpose;
- Rigorously defining the social need;
- Measuring the social and business value;
- Creating the optimal innovation structure; and
- Co-creating with external stakeholders.

After 2011, some authors (Spitzeck, Chapman, 2012) have tested the so-called theory of added value and its practical dimensions. They reached the conclusion that there is some empirical evidence of the shared value concept in practice. Others (Crane et al., 2014) do not agree entirely with the stipulation of Kramer and Porter, and point out some flaws in the theory, namely that it ignores the tensions between social and economic goals, it is naive about the challenges of business compliance is based on a shallow conception of the corporation's role in society. Still others (Lapiņa et al., 2012) view CSV as the next stage of development of the existing CSR concept; a new way of thinking that brings more clarity to CSR and how it fits with business. Every academic theory based on a specific corporate behaviour needs confirmation or rejection through empirical data from active companies in practice. In order to affirm it for the future, it is necessary to address the issues that shared value concept is defined with little precision, has measurement problems, overlaps with many other concepts and lacks empirical research. One of the latest studies in Indonesia examines the influence of shared value on some aspects of company results, such as financial parameters, corporate image and human resources, confirming their positive correlation (Tyas, Sukoharsono, 2014).

Creating shared value entails embedding a social mission in the corporate culture and channelling resources to the development of innovations that can help solve social problems. In some cases, this is a matter of reemphasizing firm's founding social mission. Turning the pursuit of shared value opportunities into a regular activity requires defining a clear social purpose, publicizing it internally and externally, and embedding it in core processes such as strategic planning and budgeting. This establishes a culture that unleashes the best in employees and helps mobilize external partners that have similar goals. Further the social impact of clusters' activities is particularly focused on the following conceptual business solutions:

- **Inclusive Business**, that has the capacity to engage business across industries in a collaborative effort with different organizations, government agencies and other network partners, to scale up action, gain greater insights, and overcome both internal and external barriers to scaling up these ventures around the world.
- **Responsible Employment Strategies** to address the rising unemployment, widening skills gaps, and a persistently high number of people in vulnerable employment.

- **Rural Livelihoods** to enable effective cross-industry collaboration to make rural areas more attractive places to work, live and invest in.

These business solutions responds to rural challenges and tackle the root-cause of these challenges through shared understanding of rural development needs; scalable solutions for rural areas; and clarity on roles and sustainable interventions for business, governments and civil society.

Rural areas and structural transformation - local economies, common problems and characteristics

No common definition of the term rural area has so far been accepted within the European Union in the former European legislation and practice. Each Member State employs its own national definition of division of these areas. The most widely used definition in the countries of the European Union is the definition of the Organization of Economic Cooperation and Development (OECD) which determines two hierarchical levels : local = municipality – LAU1 and regional = district – NUTS3.

On a local level the municipalities with population density below 150 people/km² are defined as rural. On a regional level bigger administrative units are distinguished on the basis of the percentage of the population inhabiting each of the areas. This ratio has been applied to define the following 3 regions: predominantly rural – > 50% of the population lives in the rural municipalities; rural to a considerable degree – 15-50% of the population lives in the rural municipalities; predominantly urban – < 15% of the population lives in the rural municipalities.

Each NUTS 3 region in the European Union belongs to one of the three mentioned types of areas. The methodology and the definition of the OECD are widely used in the European Union in determining their rural areas.

In 2010 a change in the methodology of the OECD was made so the weaknesses in the classification of the different regions to be overcome. This was achieved in three steps: 1) Creating clusters of urban grid cells with a minimum population density of 300 inhabitants / km2 and minimum population of 5000 people. All cells outside these urban clusters are considered rural; 2) grouped the NUTS 3 regions with territory less than 500 km2, with one or more neighbouring regions only for the purpose of classification; 3) classification of the NUTS 3 regions based on the proportion of the population in the rural grid cells. More than 50% of the total population in the rural grid cells defines the region as a "predominantly rural", between 20% and 50% of population in the rural grid cells is placed it in the "intermediate" region and less than 20% of population from the rural grid cells defines it as a "predominantly urban" region (A revised urban-rural typology, 2010).

According to the European Commission more than 91% of the EU territory consists of "rural areas". The population living in those areas is more than 56% of the population of the 27 Member States of the Union (Rural Development, 2014).

Many rural areas face significant challenges. Some of their enterprises (mainly from agriculture and forestry) have yet to become competitive. The average income per capita in those areas is lower than in the urban areas, and the service sector is less developed. Furthermore, caring for the environment in rural areas is often associated with high financial costs. Agriculture and forestry remain crucial for the land use and the management of the natural resources in the rural areas of the EU, as well as a starting point for economic diversification in the rural communities. Therefore strengthening the policy for the rural development has been converted to a common priority for the Union.

On the other hand, the European rural areas have much to offer. They provide essential resources. Their value as beautiful places for recreation – as long as we take good care of them – is obvious. Many people are attracted by the idea of living and / or working there, if they have access to adequate services and infrastructure.

The lack of homogeneity of the rural areas across the EU and within Member States is a problem for the development of the programs and the vision of the European and national development policies. To give an individual response while developing solutions, the diversity and the "mix" of economic, social and cultural differences must be taken into account (IFAD, 2011).

More than half (51.3% in 2012) of the EU's territory is within the regions classified as predominantly rural. These areas are inhabited by 112.1 million people, more than one-fifth (22.3%) of the population of the EU-27. Only two-fifths (38.7%) of the area and more than a third (35.3%) of the EU population lives in medial regions in 2012, while predominantly urban areas constitute only one-tenth (10.0%) of area, but are home to more than two-fifths (42.4%) of the population.

The average share of population in predominantly rural areas of the EU-27 is 22.3%.

Rural areas in the Balkan countries, members of the EU (Bulgaria, Greece and Romania) face common challenges: low capacity to create high quality and sustainable jobs; lower incomes than those in the urban areas; less job opportunities and not enough available jobs in a small range of economic activities. The differences between the regions have caused significant emigration flows of the rural population.

The population in the medial and rural areas of the Balkan countries in the EU-27 has decreased, especially in the rural areas in Bulgaria (-9.9 ppm), (Table 1).

Table 1. Population and population density in Balkan countries in the EU-27

Country	2007						2012					
	Predominantly urban regions		Intermediate regions		Predominantly rural regions		Predominantly urban regions		Intermediate regions		Predominantly rural regions	
	Population	Population density	Population	Population density	Population	Population density	Population	Population density	Population	Population density	Population	Population density
Bulgria	1 237 891	918,8	3 442 498	68,6	2 998 901	50,1	1 296 615	1 051,4	3 282 254	66,5	2 748 355	46,7
Greece	5 167 478	705,2	1 168 554	73,8	4 835 708	44,9	5 274 724	688,0	1 194 148	72,8	4 821 195	45,5
Romania	2 232 162	1 272,8	9 428 521	102,7	9 904 436	72,4	2 264 865	1286,8	9 375 778	102,1	9 715 206	71,0

Source: Eurostat, 2014.

Low birth rates and higher life expectancy determine the change in the age structure of the population of the EU-27 over the next decades. As a result, the share of the working age population will be reduced while the relative number of pensioners will grow (Agriculture-rural development statistics, 2014).

This development towards aging population is already apparent. The data show that relatively few people of working age live in rural areas. In 2012, the proportion of older people aged over 65 living in rural areas of the EU-27 was 18.6% compared with an average of 17.8% in the all regions. The highest proportion of people aged 65 or over is in two regions in mainland Greece (Grevena and Evritania).

The social perspective on development emphasizes that the best route to socio-economic development, is through decent work. But the reality now speaks for itself – the level of inequality differs widely, and the income gaps have also changed to varying degrees. Additionally voices are raised not only towards the inequality of the outcome, but also about the inequality of opportunity. The share of long-term unemployment (as percentage of the total unemployment) in the EU is increasing. It has reached and surpassed its pre-crisis level, with a sharp rise in the latest quarters. 26 million people (10.8 % of the economically active population) in the EU are looking for work. In several Member States, unemployment remains close to the historically-high levels first seen in the economic crisis. Additionally, the employment rates vary widely between European countries though several measures were initiated to improve their employability, e.g. enhancing and further developing of skills and knowledge, better support for transition to the labour market.

The employment rate for those aged 20-64 in the Member States of the Balkans as a whole is lower. The comparison of the indicators from 2007 and 2012 shows a decrease in the intermediate regions of Bulgaria with 5.8%, while in the rural – 5.1%. For the intermediate regions of Greece the reduction is 11.8% and for the rural – with 8.9%. The intermediate regions of Romania have marked a slight increase in the values (0.1), while in the rural areas there is a decrease of 1.5% (Table 2).

In the rural areas of Greece the employment is higher than that in the medial or predominantly urban areas.

The difference between the level of employment in the predominantly rural and predominantly urban areas is particularly high, especially in Bulgaria (11.5%) and Romania (5.8%).

The unemployment rate in the rural areas of Bulgaria and Greece is a double-digit number (Table 2).

The biggest differences between the unemployment rates faced in different types of regions are registered in Bulgaria.

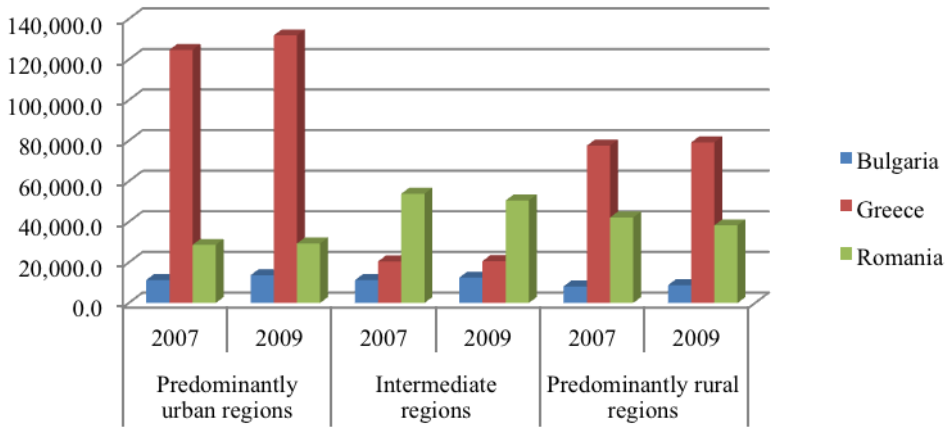
Table 2. Employment and unemployment rates by age from 20 to 64 years

Country	Employment rates by age from 20-64 years (%)						Unemployment rates by age from 20-64 years (%)		
	Predominantly urban regions		Intermediate regions		Predominantly rural regions		Predominantly urban regions	Intermediate regions	Predominantly rural regions
	2007	2012	2007	2012	2007	2012	2012		
Bulgaria	77,6	71,2	68,0	62,2	64,8	59,7	7,3	12,6	14,0
Greece	65,9	53,9	64,8	53,0	66,4	57,5	25,9	26,4	21,4
Romania	67,8	67,9	64,4	64,5	63,6	62,1	6,1	6,9	7,3

Source: Eurostat, 2014.

The sector of services contributes more than half of the total value added of the rural areas in all Member States in 2010. The exception is Romania, where agriculture, forestry and fisheries sectors have the largest contribution to the total value added.

Graph 1. GDP Euro per habitant in Balkan countries in the EU-27



Source: Eurostat, 2014

In 2009 intermediate and predominantly rural areas of Greece with the highest levels of GDP per habitant (Graph 1). In 2010 in the rural areas of Bulgaria, Greece and Romania, the contribution of agriculture, forestry and fisheries to the total added value was higher than the contribution of the construction sector. The highest rates of gross

value added from the agriculture, forestry and fishing are registered in Bulgaria (11.2%) and Romania (both 11.0%).

Although the share of agriculture, forestry and fisheries in the rural economy has reduced, the importance of diversification of the rural economy is growing (Agriculture statistics at regional level, 2014). In the EU-27 about 5.2% of the farms have at least one other source of income.

The contribution of the agriculture to the regional economic activity is at least 5.0% in 30 regions across the EU. This includes all regions in Bulgaria and Romania (other than metropolitan areas) and seven regions in Greece.

Much of the territory of all Member States is rural and a significant number of European citizens live in those areas. Therefore it is important the regional development to be closely linked to the rural development. It must provide the conditions for increasing the quality of life in these areas, leading to a reduction of the regional disparities. Given the nature of rural areas, which have always been associated with agricultural production and food products processing, their development should be linked to the Common Agricultural Policy (CAP).

According to strategy "Europe 2020" and the overall objectives of the CAP, there are three long-term strategic objectives of the EU policy for rural development in the period 2014-2020:

- Promoting the competitiveness of agriculture;
- Ensuring sustainable management of natural resources and activities related to climate change;
- Achieve balanced territorial development of the economies and rural communities, including creating and maintaining employment.

Clusters role in rural development – local economy, social capital, theory for regional economic integration

In the past, the term "rural" was commonly used as inter-changeable concept for agricultural clusters. Recently with the emergence of rural clusters including in the field of tourism, information and communication technology, manufacturing, and renewable energy production, clusters in rurality is becoming a meaningful development trend. Clusters are effectively working in the agriculture sectors, though challenged with competition from less advanced regions, global supply chains, energy costs and environmental concerns, changes in population composition, expanding digital communications networks, new products and emerging markets.

In respect to rurality it is worth also emphasizing the extent to which debates about rural development are often preoccupied with the operation of public policy and neglect consideration of wider market trends and business and corporate strategies. Of course, this does not necessarily mean to discard the current policy framework and the dominance of the CAP or other policy instruments as key factors in influencing macro and micro-level

management decisions, shaping environmental and other rural development interests.

The main constraints that are serving to hamper sustainability of rural areas and the stable growth of rural development include a lack of resources (financial social, informational), a lack of sufficient political will to see and admit real problems, a lack of leverage, and a lack of institutional and administrative capacity. These missing components contribute to the negative indicators and future trends in development of rural communities, identified for Bulgaria and its rural areas:

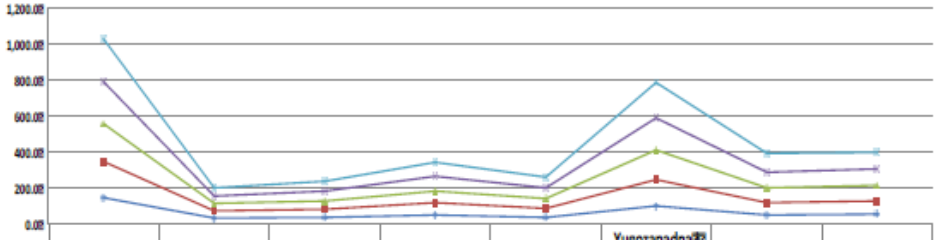
- Weak connection between key elements of the institutional system and weak internal controllability over critical processes, as they are being re-configured;
- Broad definition and measures to contribute to a new 'state of stability' for the system and, according to this, a new potential to use; and
- Need for a new configuration of key variables and processes.

Indeed clusters' capacity to set into motion significant number of direct and indirect benefits in rural areas questioned the preparedness of local conditions to foster entrepreneurial activity, production process and division of labour, joint action and local social capital. Therefore developing more systematic approach towards regional clusters and those functioning in the rural areas, especially with small business at their core level, is more than ever crucial for improving rural architecture, encouraging local authorities and proofing of the legislation and decisions made at national level.

Bulgaria has entered the European Union with a per capita income at only 73 percent of the European average and the general trend of poverty indices impose a serious risk of its ability to reproduce as a social phenomenon for the next generations. Bulgaria occupies the last place as far as income and wages are concerned. More than 22% of the population lives in risk of poverty and close to 43% live in material deprivation. The people in risk of poverty and social exclusion represent 49,1% of the Bulgarian population. Crisis has also reduced spending on health, education and social safety nets, such as insurance and thus endangers society stability and well-being. The country is with increasing unemployment rate for the past year. In 2013, the rate of unemployment in Bulgaria in the age group 15 to 74 years included (according to EUROSTAT data comparable to data about the other EU Member States) is 12.9 percent as compared to the EU 28 average of 10.9 percent and the Eurozone average of 12.1 percent. Unemployment rate in Bulgaria decreased to 11.40 percent in the second quarter of 2014 from 13 percent in the first quarter of 2014. According to the OECD definition some of the largest shares of rural population belong to the countries with higher proportion of more peripheral regions, among which is Bulgaria. These regions experience lower employment rate, insufficient infrastructure and limited access to certain social services. Nevertheless statistics are definitive towards the importance of the rural areas – 33% is the employment rate, while the contribution to the GVA is 25.1% between 2007 and 2009 the lowest GDP per capita is registered.

According to EUROSTAT data in 2011 on predominantly rural areas[5] of Bulgaria, youth (15-24 y.o.) unemployment reached 30.1% compared to the average 27.9% for Bulgaria and 22.7% for the EU-27. The highest differences between unemployment rates in the different types of regions were recorded in Bulgaria.

Graph 2. Unemployment levels per regions

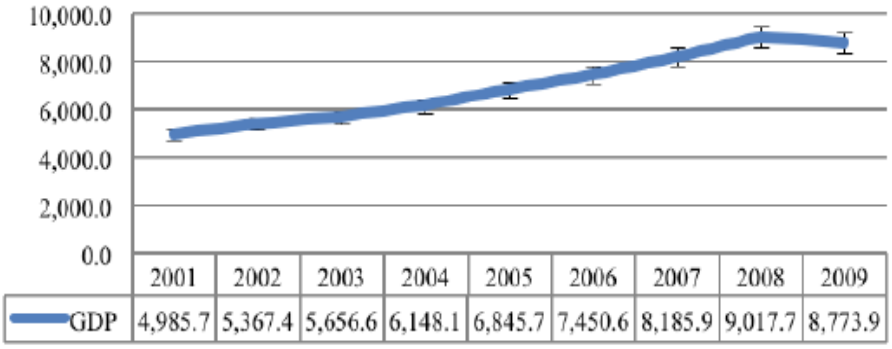


	Severna yugoiztochna Bulgaria	Severozapaden	Severen tsentralen	Severoiztochen	Yugoiztochen	Yugozapadna yuzhna tsentralna Bulgaria	Yugozapaden	Yuzhen tsentralen
2013	239.4	46.3	56.9	74.9	61.3	196.9	105.6	91.3
2012	231.7	39.8	53.3	81.3	57.3	178.7	87.6	91.1
2011	213.0	42.8	47.1	68.1	55.0	163.2	79.6	83.6
2010	199.3	38.8	43.8	65.7	51.0	148.7	72.1	76.6
2009	143.0	29.8	33.3	47.7	32.2	95.0	44.9	50.1

Source: Eurostat, 2014.

The country has one of the highest shares of the population at risk of poverty or exclusion as defined by the Europe 2020 strategy. The economic development in rural regions in Bulgaria, measured in GDP per capita is one of the lowest at the European level or 29% of the average GDP.

Graph 3. GPD in predominantly rural regions (mln. EUR)



	2001	2002	2003	2004	2005	2006	2007	2008	2009
GDP	4,985.7	5,367.4	5,656.6	6,148.1	6,845.7	7,450.6	8,185.9	9,017.7	8,773.9

Source: Eurostat, 2014.

5 According to the typology at NUTS 3 level for predominantly rural, intermediate and predominantly urban areas from 2010, 15 from Bulgarian districts are classified as predominantly rural, 12 as intermediate and 1 as predominantly urban area: Sofia city.

Bulgaria is among the 4 Member-states (Greece, Estonia, Bulgaria and Romania) that have reported declines of 35–38% in the agricultural labour input. The highest contributions of agriculture, forestry and fisheries to value added in predominantly rural regions were recorded in Bulgaria (11.2 %).

Historically, since 1990s series of incremental steps to reform rural and agricultural policies in Bulgaria, with the purpose to prepare the economy and institutions for the country's full-membership in the European Union (EU) have been undertaken. However, serious concerns remain about the limited scope of policy reform and the continued difficulties in resolving the various economic, social and environmental problems experienced in Bulgaria's rural areas. The effect searched through reforms was not only to increase total output but also to provide for stable productivity growth and cost optimization at microeconomic level. Reforms undertaken searched for significant changes at production-level and were performed simultaneously and supported by development of commercial and public institutions. Unfortunately none of these partial attempts were possible in the absence of market-based institutions and policy.

The Law for Regional Development was passed in 1999 to ensure and regulate regional policy and development and to create framework that plans and executes this policy. Six planning regions were established in accordance to government decree 145/27.02.2000 and the European criteria for regional structure NUTS-2. That way was created the territorial and statistical framework for regional development and the established new regions were included in programming of pre-accession funds of the EU. The influence of the EU accession process became a decisive factor, since the industrial policy was formed as one of the negotiating 'chapters' of the acquis, which must be taken as a requirement of the accession process. Thus, in the early 2000s Bulgaria adopted the horizontal industrial policy measures mandated by the EU. The regional development was represented by its five main priorities: *Priority 1* "Increase of regional and local economic initiative"; *Priority 2* "Improvement of infrastructure related to the business' development"; *Priority 3* "Development of professional abilities in support to regional and local economic initiatives and transition to information society"; *Priority 4* "Development of suburban regions"; *Priority 5* "Increase of regional role in formulating and applying policies for regional development".

In 2004 were made the first steps in cluster creation and institutionalization, when were identified four key industrial sectors suitable for launching and supporting cluster initiatives. The first cluster organization "Bulgarian Cluster for Information and Communication Technologies Foundation (ICT Cluster)" – was registered at the end of 2004 as a non-profit legal entity. Two more clusters were established in the early 2005, and the process was further stimulated by the PHARE project launched in mid-2005 aimed to introduce approach and model.

An integral element of the EU PHARE programme "Introduction of a cluster approach and establishing of a Cluster Pilot Model" was the delivery of a National Clusters Strategy in Bulgaria. Nowadays the Association of business clusters is the one aimed at gathering the

Bulgarian clusters and establishing national standards and traditions in clusters policy. The particular objectives in releasing these are:

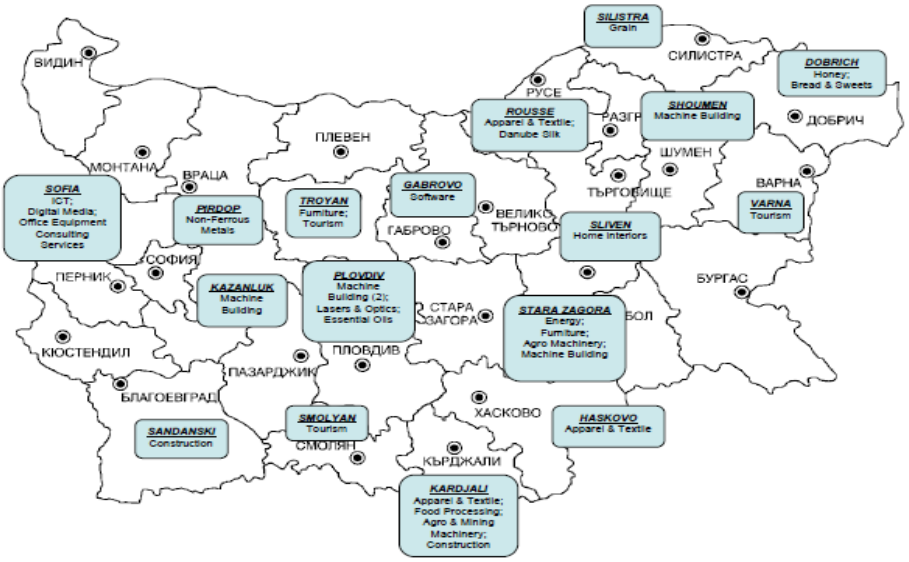
- Development and participation in preparing strategies and policies, related to social and economic development of the country;
- Research and maintenance of database of clusters in national, European and international level;
- Realize of projects for regional social and economic development, development of clusters, cross-border cooperation and others, funded by national, European and international programs;
- Membership in national and international associations and organizations.

The National Strategy for cluster development from 2006 has set priority areas to address in order to operationalize the clusters as a way whereby particular social and economic disadvantages could be tackled:

- Systemic relationships is the core characteristic of every successful cluster organization, which are difficult to establish in view of the low level of organization and limited applicability of cooperative culture;
- Geographically bound clusters could provide for specialization and preservation of historical, geographical and in general local community characteristics;
- Taking into account that the cluster itself has particular life-cycle, already existing branch organizations, representative associations could be in position to provide initial support;
- Competences and connectivity still are not mobilized to improve entrepreneurship and competitiveness, as well as to network connectivity.

27 clusters were established by that time within different industrial branches: ICT and information technologies, media, energy, tourism, food industry, textile, furniture, etc.

Figure 1. Mapping clusters in Bulgaria



Source: Association of business clusters.

According to the Action plan for creation of clusters in Bulgaria development of 20 clusters was expected as result by the end of 2010. By 2011, Bulgarian industrial policy was claimed to be in line with the EU industrial policy approach, summarized in the National Reform Programme document for 2010-1013 adopted in April 2011. The "Support for cluster development in Bulgaria" was promoted to stimulate enterprises by receiving grants for establishing an administrative body of the cluster, for implementing projects with quick results and investment activities, in accordance with the cluster development strategy. In 2010 and in 2011, are launched calls for proposals without fixed deadlines for application for the scheme BG161PO003-2.4.01 "Support for cluster development in Bulgaria". For the period 2007-2013 the budget for the whole procedure "Promotion of business networking and clustering" (including any future calls) is EUR 15 006 368. According the text of the programme, the cluster concept covers a variety of different business structures – national-regional-cross-border clusters, clusters of competence, industrial or production systems and innovation systems. It is used for different purposes – to increase the competitiveness of SMEs, to support collective research, to rationalize a whole industry, and to implement environment management system.

To strengthen institutional support and locally established collaborations close to 60 municipalities in rural areas took part in projects for integrated development, financed by the European Union and the bilateral national programs aimed at development the capacity for planning and applying the policies for local development. In the process of structuring the development plans for the planning period 2007-2013, local action groups are involved into various collaborations - non-government organizations, educational and cultural institutions.

In order to encourage the interest towards the opportunities provided by the Leader approach a number of projects are initiated and supported by the government. Within the framework of these projects are established eleven Local Action groups that cover 4 per cent of the rural population, other nine LAGs were in the process of setting up. Furthermore, a support to the already established local action groups is provided by sub-measure 1: "Running the Local Action Group, acquiring skills and animating the territory for selected local action groups". This sub-measure has the following objectives, e.g. to encourage development of strong and efficient LAGs; to ensure resources – human, technical, financial that are needed for the overall support and delivery of LAGs' activities and strategies; to enhance awareness and skill of local people in the Leader approach and to encourage their active participation in the process of local development strategy implementation.

The rural development programme for the next programming period 2014-2020 is built upon six thematic priorities and fifteen priority areas aimed at programme interventions, innovations and transfer of knowledge, etc. To strengthen rural development as well as the adoption of measures for promoting better and more equitable integration of the rural sectors with the rest of the national economy a better understanding is needed in terms of institutional responsibilities and priority fields.

Conclusion

The notion of clustering is hardly new, having already been described in the general economic literature, starting from the Marshall principles and following basic reasons related to minimizing costs. Indeed there is a relatively underdeveloped thematic area concerning the role of the clusters' networks in the field of social empowerment and rural development. Few cluster studies address directly poverty reduction, social inclusion, though the characteristics and the functions of the clusters themselves recognize their capabilities to further local economies, reduce vulnerability of particular economic sectors and bring about advantages for local business, institutions and society. *"Clusters provide a way of organizing thinking about many policy areas that goes beyond the common needs of the entire economy. Cluster-based thinking can help focus priorities and guide policies in science and technology, education and training, export and foreign investment promotion, and a wide variety of other areas. A cluster orientation highlights the fact that more parts of government have an influence on competitiveness than normally recognized, especially within government itself. Cluster theory makes the impact of policies on competitive position much clearer and more operational. Effective solutions often require different parts of government to collaborate"* (Porter, 2000).

There are certain evidences that clusters in the early stages of industrialization can provide employment and contribute to employment growth. Usually the wage levels in clusters are usually better than in non-clustered firms or regional average wage levels, and also transaction costs are reduced, while labour sharing and sub-contracting. Additionally the growth of a cluster can disadvantage small firms or sub-contractors as they are more vulnerable to shifts in demand and may have to lose out to larger and stronger firms. Clusters and regional specialization are empirically associated with higher levels of

innovation and prosperity. The European Cluster Observatory has provided systematic evidence that between 30% and 40% of all employment is in industries that concentrate, or 'cluster', regionally. In some regions, this share goes up to over 50% while in others it drops to 25%. About 21% of these employees are employed in regions that are more than twice as specialized in a particular cluster category as the average region. In that relevance emergence of the "new rural paradigm" is considered to be well-grounded, where various sectors beyond agriculture are acknowledged to play a key role with regard to rural areas' competitiveness, and where investments across sectors are considered to be a more appropriate tool than farm subsidies alone. This shift can also be viewed as a change from an exogenous model of rural development, emphasising policy interventions "from outside", to a more endogenous approach based on the notion of rural development as a process involving multiple levels, dimensions and actors, that is also self-driven" (RUDI Rural Development Impacts).

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Review Article

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AGRICULTURAL AND RURAL DEVELOPMENT GOVERNANCE AND COORDINATION IN BOSNIA AND HERZEGOVINA[1]

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Summary

Rural economy in Bosnia and Herzegovina (BiH) is increasingly diversified but agriculture is still important. Governance influences agricultural and rural development (ARD) policy impacts. The paper aims at analysing ARD governance and coordination in BiH. The paper is based on primary information collected by questionnaires and semi-structured interviews performed in 2011 with representatives of 120 institutions as well as a secondary data review.

Vertical coordination between State level institutions with entities, cantons, regions, municipalities and non-state actors, especially civil society ones, is still particularly challenging. Coordination between the State Ministry of Foreign Trade and External Relations; Ministries of Agriculture of the Republika Srpska (RS) and Federation of BiH (FBiH) and the Department for Agriculture of Brčko district is crucial. Participation of civil society organizations in ARD policies design and evaluation should be encouraged. Effectiveness of vertical coordination also depends on quality of horizontal coordination at RS and FBiH levels.

Key words*: rural development, agriculture, governance, coordination, Bosnia and Herzegovina.*

JEL: *Q16, M24*

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Introduction

Bosnia and Herzegovina (BiH) consists of two governing entities, namely the Federation of Bosnia and Herzegovina (FBiH) and Republika Srpska (RS), and one self-governing administrative unit i.e. Brčko District (BD) under State sovereignty. At the local administrative level, the country has 142 municipalities: 79 in the FBiH, 62 in RS and one in BD. The municipalities of FBiH are organized into ten cantons (Government of Bosnia and Herzegovina 2010). This institutional and political setting influences not only the design and implementation of agricultural and rural development (ARD) policies but also the governance of the whole country.

Rural economy in BiH is increasingly diversified, however, a significant share of households is still engaged with agriculture (e.g. Berjan et al., 2010). The primary sector is still important in BiH from economic as well as social viewpoints (Lampietti et al., 2009). Agriculture share in GDP was 7.40% in 2012 (EC, 2013). According to the Labour Force Survey for 2010, the agricultural sector employs 166,000 persons i.e. 19.7% of the total labour force (ASBiH, 2010). Agricultural land covers 50% of the total area of BiH (MoFTER, 2009). According to Bojnec (2005), 50% of the Bosnian population rely on agriculture to a significant extent. Around 61% of the total population can be classified as rural (UNDP, 2013). Non-income indicators of poverty are extremely consistent in rural areas providing significant evidences that poverty is still largely a rural phenomenon (Lampietti et al. 2009). In BiH, most of people living in rural areas are very young or elderly with a declining economically active population (Muenz, 2007).

Evidence from many European countries suggest that there is a strong relationship between governance and rural development policies design, delivery, and most importantly, impact on rural communities' livelihoods and quality of life (e.g. RuDI, 2010).

Governance is a fashionable term that in the course of the last years has become more and more important as used in nearly every political and scientific research regarding regional development and nature conservation. It is a complex term and it used in different, complicated contexts and disciplines (Bowles, Gintis, 2002; Kohler Koch, Rittberger, 2006; Shipley, Kovacs, 2008; van Kersbergen, van Waarden, 2004; van Kersbergen, van Waarden, 2001; Ward, McNicholas, 1998).

The Institute on Governance (Graham et al., 2003) defines governance as "*the interaction among structures, processes and traditions that determine how power and responsibilities are exercised, how decisions are taken, and how citizens or other stakeholders have their say*". Governance comprises mechanisms, institutions and processes of decisions making and implementation through which persons and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences (Cheema, 2005). Governance analysis focuses on the formal and informal actors involved in decision-making and implementing the decisions made and the formal and informal structures that have been set in place to arrive at and to implement decisions (Sheng et al., 2007).

Local level governance has increasing importance for place-based rural policy. Decentralisation is granting new responsibilities to sub-national levels. Attention to place-based policies puts the accent on the role of local entities in policies implementation. New bottom-up approaches to rural development involve voluntary associations of local governments, civil society organisations and the private sector. These actors interact and become interdependent. However, vertical and horizontal coordination is crucial for the success of such undertakings (OECD, 2006).

As far as civil society organisations in BiH are concerned, there was a steady development after the civil war so that there were over 8,000 registered NGOs and non-profit organisations in 2004, but the number of active organisations was generally estimated to lie between 500 and 1,500 (Barnes et al., 2004). Moreover, there was a growing but uncertain number of informal community-based groups and organisations (CBOs) as well as community councils (Sterland, 2006).

The paper aims at analysing ARD governance and coordination in BiH at state, entity and local/municipal levels with a particular focus on the Republic of Srpska entity.

Material and Methods

The work is based on an extended analysis of secondary information and on questionnaires and semi-structured interviews performed in winter 2011 with representatives of public and civil society institutions.

The questionnaire survey focused on the design and implementation of agro-rural development policies in BiH and on the evaluation of coordination between the involved actors. Key questions included the operational level and the geographical coverage of each organization; the understanding of "rural development"; the involvement of the organization in a rural development policy and/or project and in which phase of the process (design, implementation/delivery, monitoring/evaluation); the level of its cooperation and coordination with other public, civil society and international organizations dealing with rural development in BiH. Additional inquiries were about the main political, technical and strategic constraints that hamper coordination between organizations dealing with rural development and/or render it ineffective. Conflicts between the different actors were also investigated. Respondents identified also the organization that assumes, according to them, the leadership in coordinating rural development issues in BiH. The questionnaire has been sent by e-mail to around 120 representatives of different institutions and organizations as well as international donors and cooperation agencies. In particular questionnaires were sent to key actors such as the State Ministry of Foreign Trade and Economic Relations and the Ministries of Agriculture, Forestry and Water Management (MAFWM) of the RS and the FBiH.

Additional information have been collected through open interviews and meetings with a number of independent experts (21 in total) - including local representatives, field officers and consultants of international organisations and local NGOs - and representatives of the seven selected municipalities (Pale, Istocni Stari Grad, Istocno Novo Sarajevo, Trnovo,

Istocna Ilidza, Sokolac and Rogatica) and of the town of East Sarajevo (TES). Selected municipalities are located in Sarajevo-Romanija region (SRr, south-eastern BiH and RS) and are characterised by a high share of rural population.

Results and Discussion

The design and implementation of ARD policies involve different supra-national or international, national and sub-national actors (regional; intermediate or sub-regional; and local), (OECD, 2006). In BiH, intermediate levels, entities of RS and FBiH, have a crucial role in ARD policies design and delivery. International organisations and development agencies have implemented different development projects and programmes during the post-war period.

In BiH, all levels of governance, ranging from the state to municipal authorities, are involved in the agricultural sector management and rural areas development. Farmers in BiH are disadvantaged by a lack of government structures and institutions needed to promote and regulate markets. The state (central) government does not have a ministry of agriculture. The two entities of the FBiH and RS, and Brcko district, have each retained their own separate quasi-ministerial structures (Christoplos, 2007). Agriculture and forestry issues in BiH are regulated at the entity levels.

At the state level the Sector for Agriculture, Food, Forestry and Rural Development (SAFFRD) at the Ministry of Foreign Trade and Economic Relations of BiH (MoFTER) deals with the coordination of international affairs, harmonisation and monitoring of donor activities, as well as the synchronisation of activities for both entities (MoFT, 2010).

The state policy in the agricultural, food and rural development sector in recent years is developed in accordance with the goals and needs for accession to the EU which is possible only with the active participation of all stakeholders in the agricultural sector. The main agriculture strategies are BiH Harmonisation Strategy and Operational Programme for Agriculture; FBiH Strategy for Agriculture and Rural Development; RS Strategy for Agricultural Development; RS Strategic Plan for Rural Development by 2015. During the course of 2009 the BiH Strategic Plan for Harmonisation of Agriculture, Food and Rural Development 2008-2011 along with the Operational Plan were adopted (MoFT, 2010).

Systematic and structural harmonization of agricultural policies at the state level began with entry into force of the Law on Agriculture, Food and Rural Development of BiH, adopted in May 2008. The measures of the Law are basically classified into policy measures to support agricultural markets and measures for rural development. Policy measures to support agricultural market are divided in measures to improve products quality, measures of direct support to agricultural farms and measures for foreign trade. Measures related to rural development encompass those aiming at increasing competitiveness, protecting rural environment, diversifying activities in rural areas and improving life quality in rural areas.

Moreover, the MoFTER, supported by the European Commission (EC), prepared the Strategic Plan for the Harmonization of BiH Agriculture, Food and Rural Development

2008-2011 and Operational Programme for the Harmonization of BiH's Agriculture, Food and Rural Development 2008-2011. The key objective of the Strategic Plan is to provide a framework for the gradual harmonization of policies, programmes, institutions, laws, regulations, systems and services both within BiH and with the EU.

At entities level, institutions in charge of agricultural sector management are the Ministry of Agriculture, Forestry and Water Management (MAFWM) in the RS and the Federal MAFWM in the FBiH while Brcko District local administration has its own Department of AFWM. The Strategic Plan for Rural Development 2009-2015 was adopted in the RS (November 2009) while the Development Strategy of Agriculture, Food and Rural Development in the Brcko District was prepared in 2008 for the period 2008-2013.

Moreover, at meso and local levels there are agricultural administrations in the 10 Cantons of FBiH (6 ministries and 4 departments of agriculture in the cantonal Ministries of Economy) and municipalities (80 in the FBiH and 63 in RS).

In ARD are involved also public administrations on State or Entity level with competencies relevant for the agricultural sector; specialized institutes; NGOs and sector associations (EC, 2004). There are about 213 agricultural co-operatives in the FBiH of which 155 are active and 347 in the RS of which only 111 are presently reported to be active (IFAD, 2011).

Moreover, the agricultural, forestry and rural development sector is characterized by the presence of a number of international donors and financial institutions, such as the USA/USAID, Sweden/SIDA, Italy/IC, UK/DFID, Japan/JICA, Spain/AECID, Switzerland/SDC/SECO, Czech Republic/CzDA, the European Commission (EC), the World Bank, European Bank for Reconstruction and Development (EBRD), UNDP, FAO, etc. However from 2009, due to world economic crisis, the investments of donors in BiH have decreased. The sector of agriculture and forestry received 6% of total official development assistance (ODA) allocations in 2009 and 2% of total ODA allocations in 2010. The total allocation to the agriculture and forestry sector by the members of the Donor Coordination Forum (DCF) in BiH was €46.61 million in 2009. For 2010, donors have contributed €13.10 million including EC Pipeline projects for 2010 in the value of €1.3 million and the World Bank loan tranche of €4.26 million (MoFT, 2010). According to the DCF, total allocation to aid in Bosnia in 2011 was about € 1.503 billion of which € 34.200 million were dedicated to agriculture and forestry sector (2.28%).

Financial support to individuals or companies involved in agriculture and rural development is provided also by micro-credit organizations and banks. Under adverse conditions, the Federal Investment Bank and the Investment Development Bank of the RS have special credit lines aimed at supporting agriculture and rural development.

In the RS in general and SRr in particular, support for rural development by municipalities is partly stated in local planning documents, which include the Local Economic Development Strategies. Many local organizations are operating in municipalities. Most of them have a predominant charity character largely due to the consequences of the civil war. Sport, cultural, youth and students' organizations are present in a large number as well. Those involved

in ARD are mainly agricultural cooperatives, environmental associations, associations of entrepreneurs and cultural heritage preservation associations. Financial and technical support for NGOs and cooperatives is provided by local budgets. In all municipalities financial aid is guaranteed for those NGOs that are identified as organizations of public interest (*e.g.* organization of war veterans) while cooperatives and remaining NGOs have to submit specific projects to be eligible for funds from local and regional budgets.

Rural development strategies, plans and programmes are generally missing at local and regional level. As of 2011, only Pale municipality had a strategy for development of agriculture, while in municipalities of Istocni Stari Grad and Istocno Novo Sarajevo preparation of this document was still in progress, and the other four surveyed municipalities (Trnovo, Istocna Ilidza, Sokolac and Rogatica) did not have any strategic document related to agriculture and rural development with the exception of Rogatica where was foreseen the preparation of a Local Environmental Action Plan (LEAP). Overall in the 2006-2010 period, local development strategies focused mainly on agriculture development rather than on rural development, however the trend, generally, shows an increasing attention paid to non-agricultural activities. Nevertheless, it seems that there is a consistent lack of coordination between local institutions operating in rural areas.

The questionnaire for evaluating the level of coordination between the actors dealing with ARD policies in BiH encompassed the main public institutions and civil society organizations dealing with rural development in municipalities, cantons, regions, and entities as well as at the state level. Sixty-seven percent of respondents were public institutions and 33% civil society organizations. Almost half of the respondents operate at local level (46%), at entity level (40%) while only less than a third (27%) operates at the state level. Some institutions operate at two or even three levels at the same time and that explains why the sum of percentages is higher than 100%. However, some differences can be noticed between public and civil society institutions. In fact, public institutions are more present at the entity level (60%) than civil society organisations that are more present at the local level (60%) and only 40% of them operates at the state level. Most of respondents consider rural development as a cross-sectoral issue that includes the agricultural sector.

All interviewed organizations are involved in design (67%), implementation (73%), and monitoring/evaluation (53%) of agro-rural development policies. Public institutions are mostly involved in design (90%), and less in implementation (60%), and monitoring /evaluation (60%). As expected, civil society organizations are fully involved in the implementation phase (100%) and less in policy design (20%) and monitoring / evaluation (40%).

Almost all interviewees (93%) had relations with public institutions while most of them have had relations with civil society and international organizations (86%).

Sixty percent of respondents evaluate the coordination among the different actors as effective while around 20% of them evaluate it as ineffective (20% of them did not provide any answer). The main constraints and problems impeding a good coordination between involved actors in the design and implementation of ARD policies mentioned by

the respondents are: lack of communication among key actors; lack of qualified human resources; lack of understanding and of a common vision of rural issues and priorities; lack of clearly defined plans, initiatives and long-term strategies; absence of a dialogue culture and participatory approaches; high level of administrative and bureaucratic requirements; and delay in establishing some relevant structures (*e.g.* the Federal Agency for Rural Development). One of the obstacles that hamper coordination between civil society organizations and between them and public institutions is a lack of a common understanding of what is "rural" and what is "rural development".

Only 53% of respondents identified an organization as having the leadership in coordinating rural development issues. The institutions more widely identified as the most important in coordinating rural development issues are the Entity's Ministries for Agriculture while no public institution or civil society organization considered the MoFTER as the leader institution regarding these issues. In fact, it is quite common in the decentralised or 'concerted' and multi-actors driven rural policy design and delivery systems (Mantino, 2009) that the different levels of government find it difficult to clarify their respective roles and responsibilities (OECD, 2006).

Respondents also mentioned some institutions with which they have had some conflicts. It is interesting to note that public institutions have mainly conflicts with governmental organisations and some international agencies while civil society organisations, also due to their nature, present a lower degree of involvement in those conflicts.

Overall, most of the interviewees identified the main constraints in coordination among the different organizations dealing with rural development as political (40%), technical (60%) and strategic (80%).

The analysis of relations and linkages between institutions involved in the design and implementation of ARD policies in BiH and RS showed a lack and/or weakness of coordination between them. Therefore, this problem should be addressed as soon as possible in order to increase the effectiveness of these policies and their impacts on rural people's livelihoods. A basic action to strengthen coordination would be to encourage dialogue between these institutions. While "formal dialogue" does exist between some public institutions especially those operating in RS and with some international NGOs and donors, it seems that a lot need to be done in order to involve civil society and private sector organizations especially during the design and formulation phase. That is critical especially regarding the participation of rural people, farmers and their organizations. Developing strong partnership between national and sub-national governments through vertical governance arrangements and public-civil society partnering agreements can make Entity, regional and local governance institutions responsible by virtue of their participation in decision making regarding the design and implementation of rural development policies (OECD, 2006).

In order to strengthen coordination and synergy between institutions in promoting sustainable agriculture and rural development it is also necessary to harmonize entity laws and regulations with the Law on Agriculture, Food and Rural Development of the BiH.

Human capital has also a strategic relevance in order to achieve a good coordination between involved institutions. In fact, institutions' staff can operate in such a way to reduce transaction costs and to render communication smoother and flow of information faster. Communication should be developed horizontally, at the central, entity, regional and local levels, as well as vertically, across different government tiers (OECD 2006). Motivation and incentives to public institutions' staff can help in achieving this objective.

A better coordination between involved institutions means not only to reduce institutions operating and transaction costs but also to manage effectively incentives and subsidies provided to farmers and rural dwellers and to avoid frauds, corruption and "*clientelism*". A stronger partnership between Bosnian institutions dealing with rural development and those of the EU and its Member States can help ensuring a better cross-fertilization and exchange between them which can have positive impacts on their *modus operandi*.

Conclusions

Results of questionnaire survey show that vertical co-ordination between State level institutions with Entity, regional and local ones, especially civil society organisations, is still particularly challenging in BiH. State and Entity governments should encourage local actor's participation in the design and implementation of place-based rural development policies. That means that governmental and public institutions should redefine their role and devise new multi-level cooperation and coordination frameworks that emphasise power sharing between the different governance levels and inter-dependence and partnership between the wide ranges of actors in ARD policy making. It goes without saying that the ease of vertical coordination between the different levels of governance also depends on the degree of horizontal coordination especially at the level of entities (RS and FBiH), especially taking into consideration that respondents survey recognized Entity's Ministries for Agriculture as leading institutions in coordinating rural development issues. Coordination between the Sector for Agriculture, Food, Forestry and Rural Development of the State MoFTER; the MAFWM of RS; the Federal MAFWM (FBiH) and the Department for AFWM of Brcko District (BD) is crucial. Coordination with other state and entity ministries and development agencies is also relevant. Furthermore, survey results show that not all actors are appropriately involved in the ARD policy arena. That being said, civil society organisations, especially user ones, should be involved also in the design, and monitoring and evaluation of ARD.

Taking into consideration the questionnaire survey results, it should be highlighted that in order to increase their impact, ARD policies in BiH should be designed and implemented through a good coordination between multilevel governance institutions. Although good governance is not sufficient on its own it is indispensable to sustain long-term Bosnian rural territories development. In the context of rural development, good governance should not be seen as an objective on its own, but as a means to improve rural communities' living conditions by contributing to more appropriate and effective, and better coordinated services. Good rural governance is to be put into the context of a wider process of institutional reforms and rural service delivery systems encouraged by the EU and many other development agencies.

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UPRAVLJANJE I KOORDINACIJA POLJOPRIVREDE I RURALNOG RAZVOJA U BOSNI I HERCEGOVINI

Siniša Berjan[6], Hamid El Bilali[7], Snežana Janković[8], Adriana Radosavac[9]

Rezime

Ruralna ekonomija u Bosni i Hercegovini (BiH) je sve više raznolika, ali poljoprivreda je i dalje važna. Upravljanje utiče na efikasnost politika poljoprivrede i ruralnog razvoja. Rad ima za cilj da analizira upravljanje i koordinaciju poljoprivrede i ruralnog razvoja u BiH. Metodologija rada je zasnovana na primarnim informacijama prikupljenim kroz upitnik i intervjue obavljene u 2011. godini sa predstavnicima 120 institucija, a takođe su korišteni i različiti literaturni izvori podataka.

Vertikalna koordinacija između institucija na državnom nivou sa entitetima, kantonima, regijama, opštinama i organizacijama civilnog društva je još uvek poseban izazov. Koordinacija između Ministarstva vanjske trgovine i ekonomskih odnosa, Ministarstava Poljoprivrede Republike Srpske (RS) i Federacije BiH (FBiH) i Odeljenja za poljoprivredu Brčko distrikta je od ključnog značaja. Učešće organizacija civilnog društva u dizajnu i evaluaciji politika vezanih za poljoprivredu i ruralnog razvoja treba podsticati. Efikasnost vertikalne koordinacije zavisi takođe i od kvaliteta horizontalne koordinacije na nivou RS i FBiH.

***Ključne riječi**: ruralni razvoj, poljoprivreda, upravljanje, koordinacija, Bosna i Hercegovina.*

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REGIONAL ASPECTS OF FAMILY HOLDINGS STRUCTURE IN THE REPUBLIC OF SERBIA[1]

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Abstract

Considering the importance of the size of the land property in regard to the development of agriculture and its effectiveness, the ownership structure, its interdependence with the available labour force (the number of persons and annual work units) and economic size of family holdings, are analysed in the present study. Given that the territory of the Republic of Serbia is very heterogeneous in terms of the achieved level of economic development of certain regions, as well as available resources for the development of agriculture, the structural characteristics are analysed in following four statistical regions: Vojvodina, Belgrade, Šumadija *and Western Serbia, Eastern and Southern Serbia. Key indicators of family holding structure in Serbia are compared with the average for the EU-27. The aim of the present paper is to review the basic aspects of structural characteristics of family holdings, based primarily on the size of holdings/holdings, available labour force, economic size, as well as their regional diversity in 2012, according to Agricultural Census.*

Key words: *family holding, region, ownership structure, economic size, labour.*

JEL: *Q12, Q15, R23*

Introduction

Republic of Serbia, according to the 2012 Census of Agriculture, has 631,552 holdings. The predominant number 628,552 or 99.5% are family holdings that are the most important organizational entities in agriculture of Serbia and hold in their possession about 2.8 million hectares, or 84% of the total utilized agricultural area.

They are characterized by the relatively small size of the land property and large number of separate parts and parcels (Božić et al., 2004). Households with less than 2 hectares make

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up about 48% of the total number of family holdings and have 9.3% of total agricultural land used. The largest holdings, with over 100 ha of land, account for only 0.2% of the total number of family holdings but they dispose with 8.1% of the total agricultural area used.

Ownership structure of holdings is one of the deciding factors regarding the efficiency of agriculture. Agriculture of Serbia is traditionally characterized by unfavourable ownership structure, which is typical for family holdings, which, as the most numerous entities in agriculture, have a dominant impact on its overall development (Bogdanov and Božić, 2005). Given the crucial importance of the ownership structure on operating efficiency in agriculture, it can be concluded that in conditions of unfavourable ownership structure it will be difficult to be competitive at the international market and market of highly developed countries, in the conditions of increasing competition. The process of integration into the World Trade Organization and the European Union (EU), in addition to opening new large markets, requires a significant increase in productivity and competitiveness. In this regard, market liberalization occurs as a major driver of innovation and increase of competitiveness (Bogdanov et al., 2004). Hence, the possibility of family holdings to survive in the future, especially with the entry into the EU, is directly linked to their ability to make the best possible use of available resources.

Given the importance of the size of the land property of family holdings for overall agricultural development, as well as the fact that the Republic of Serbia territorially is very heterogeneous in terms of economic development of certain regions, the paper was based on the hypothesis that family holdings in Serbia are characterized by adverse ownership structure, small size of the property and large number of separate lots and parcels, with significant differences between the regions. In addition, it was presumed that this ownership structure, as well as available labour force on family farms determine their economic size, which is significantly lower than the average in the EU-27, as well as most of its members (indicators for countries in the region were especially analysed, our most significant competitors in the international market of agricultural products). The results obtained are presented at the level of Serbia and four regions (Vojvodina, Belgrade, Šumadija and Western Serbia and Eastern and Southern Serbia) because the data for the region of Kosovo and Metohija is not available. The aim of the present paper is to review the basic aspects of family holdings structural, based primarily on the size of holdings, available labour force, economic size, as well as their regional diversity.

Data sources and methods

For the analysis of structural characteristics on the family holdings of the Republic of Serbia, the data of the Statistical Office of the Republic of Serbia – 2012 Census of Agriculture was used. The analysis was performed for the individual regions[4]. The Law on Regional

4 *Region* is a statistical functional territorial unit, consisting of one or more areas, established for the planning and implementation of regional development policy, in accordance with the nomenclature of territorial units for statistics (NUTS) level 2, not an administrative territorial unit and has no legal subjectivity, *Law on Regional Development*, Official Gazette of RS, no. 51/09.

Development[5] in Serbia has introduced NUTS (the nomenclature of territorial units for statistics) classification of the five regions at the level of NUTS III: the region of Vojvodina, Belgrade region, the region of Šumadija and Western Serbia, the region of Southern and Eastern Serbia and the region of Kosovo and Metohija.

Since one of the main characteristics of family holdings in Serbia is unfavourable ownership structure, i.e. dominant share of small holdings, in the present paper, the regional analysis was conducted of their labour force, and the economic size of family holdings, depending on the size of the property.

In Serbia, for the first time, the results of the 2012 Census of Agriculture showed basic information about the economic size of agricultural holdings according to the methodology applied in EU countries. According to the EC methodology for the typology of holdings (Regulation EC No 1242/2008; Typology handbook EC, RI/CC 1500, Brussels, 25.07.2008), with which the appropriate methodology of the Statistical office of the Republic of Serbia is aligned, the economic size of the farm represents the total value of the standard output (abbreviated SO) or the results of the farm/holding, i.e. the monetary value of gross agricultural production, which the farmer can expect to potentially gain from his land (crops/perennial crops/livestock) in a given region and the «normal» production circumstances. The value of the total SO in the holding is expressed in Euro and represents the sum of the individual SO of all agricultural products (characteristics) that are produced on the farm. Individual SOs obtained by multiplying the SO coefficient per unit for each product type (type of crop/perennial crops, livestock species) and a number of these units (hectares/livestock) on the farm. For Serbia, Statistical Office calculated the coefficient of SO 2007 for the reference period 2005-2009 (Paraušić and Cvijanović, 2014).

The analysis of labour of family holdings is quite complex since the engaged labour force is unevenly distributed throughout the year, and it is difficult to determine the number of working hours of household members (who do not receive a salary, but also participate in the distribution of profit), and the number of hours of work of seasonal labour force on the farm. Due to the specificity of agricultural production and pronounced seasonality, a large number of workers is engaged for a relatively short time, as seasonal workers, who often are not officially reported to the local authorities, which is why there is no possibility of the reliable recording of such labour force. The analysis is further complicated by different methodological approaches to the definition of the labour force starting from: number of employees, number of work days or hours or annual work units. The annual work unit (AWU) is a measuring unit that represents the amount of human labour spent on agricultural activities in the holding. This unit is equivalent to the work of one person, i.e. full-time in one year, eight hours a day, 225 working days. Total manpower in the holding includes: household members (holders of estates and family members), all full-time workers on the farm, seasonal workers and labour engaged on contract, and is expressed in annual work units.

5 *Law on Amendments to the Law on Regional Development*, Official Gazette of RS, no. 30/10.

For the analysis of indicators of farm structure relating to the EU-27 members, data of the EC EUROSTAT statistical base were used (the Agriculture Census in 2010). The usual mathematical-statistical indicators (data structures, indexes level) were used in the present paper for the analysis of ownership structure, economic size, labour of family holdings, labour productivity in Serbia, depending on the size of the property. As for labour productivity Lerman et al. (2002) suggest that, in the absence of data on total factor productivity, a partial measure of productivity should be used, calculated as the ratio of agricultural output to agricultural labour (Juvančič, 2007). The above method of calculating the productivity of labour on family holdings in Serbia was used in this study.

The method of comparison was used to determine the regional differences of indicators of family holding structure between the mentioned regions in Serbia. The comparative method was used to compare the individual indicators of farm holding structure in Serbia (ownership structure, economic size of holding, available labour, achieved labour productivity) and the average for the EU-27 countries, and especially for individual EU member countries from our region (Bulgaria, Romania, Hungary, Greece and Slovenia).

Regional analysis of the ownership structure of family holdings in Serbia

The most of family holdings, relative to their total number which amounts to 628,552 in the Republic of Serbia, are in the region Šumadija and Western Serbia (42%), followed by the Southern and Eastern Serbia (with around 30% of households), while in the region of Vojvodina there is about 23% of family holdings. The least of the family holdings are located in the Belgrade region, about 5%.

The largest part of the total utilized agricultural area (UAA) in Serbia, which amounts to 2,825,068 ha, is owned by holdings in the region of Vojvodina (47%), followed by the region Šumadija and Western Serbia (29.5%), the region Southern and Eastern Serbia (about 20%) and the Belgrade region, where family holdings have about 4% of total utilized agricultural area.

The ownership structure of family holdings in Serbia is unfavourable, with a dominant share of small holdings, up to 2 ha, which account for 48% of their total number (Table 1). When observed by regions, the smallest family holdings account for more than half of total holdings in all regions, except Šumadija and Western Serbia (44%). The highest share of small holdings, with up to 2 ha of land, in the total number of holdings is in the Belgrade region (54.5%). The holdings of size 2 to 5 ha account for 29.4% of the total number of holdings. Their participation is the highest in the region of Šumadija and Western Serbia (around 33%) and the lowest in the region of Vojvodina (19.5%). It can be noted that the small holdings, with less than 5 ha make 77.5% of the total number of holdings in Serbia, and hold in their possession about 21% of agricultural land used. Small size land property of family holdings in Serbia, fragmented into a number of separate parts, does not provide the elementary preconditions for strengthening the overall competitiveness of agriculture (Božić et al., 2006).

Broken down by individual regions, family holdings under 5 ha are the most represented in the Belgrade region, about 84% (which hold about 43% of the UAA region), followed by the region of Southern and Eastern Serbia, with about 82%, disposing with 47 % of utilized agricultural area.

Table 1. Agricultural family holdings (FH) in Serbia by utilized agricultural area (UAA), according to the Agriculture Census in 2012 (in %)

UAA	Serbia-total		Belgrade Region		Vojvodina Region		Šumadija and Western Serbia Region		Southern and Eastern Serbia Region	
	FH number	UAA (ha)	FH number	UAA (ha)	FH number	UAA (ha)	FH number	UAA (ha)	FH number	UAA (ha)
≥0≤ 2 ha	48.1	9.3	54.5	14.2	50.2	4.0	44.1	11.7	50.9	15.3
>2≤5ha	29.4	21.0	29.4	29.2	19.5	7.8	33.4	30.1	31.6	31.4
>5≤10 ha	14.3	21.9	117	24.9	12.9	11.3	16.5	31.3	12.9	27.3
>10≤30ha	6.4	22.0	4.1	19.4	11.0	22.9	5.7	22.9	4.2	19.1
>30≤50 ha	0.8	7.1	0.1	4.2	2.8	13.1	0.2	2.4	0.3	3.2
>50≤100 ha	0.7	10.6	0.1	2.9	2.6	23.1	0.1	1.2	0.1	2.2
> 100 ha	0.2	8.0	0.1	5.2	0.9	17.8	0.0	0.3	0.0	1.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Authors' calculation according to Agriculture Census - 2012, SORS, Belgrade, 2014.

Only 8.1% of holdings in Serbia own more than 10 ha of land property, which use 47.7% of the enumerated UAA. The largest holdings, with more than 50 ha land property, make up only 0.9% of the total number of family holdings in Serbia, and have about 19% of utilized agricultural area. Although there is no comparability with previous census data, it can be concluded that in Serbia, a process of concentration of holdings by size of property is taking place, which is most pronounced in the region of Vojvodina. Changes in the direction of enlarging of land holdings are particularly intense in the group of holdings over 20.00 ha (Todorović, 2014). With the increase in the size of the property comes the change in the structure of production, increase in the degree of utilization of living labour of household members, increase in the degree of utilization of their own machinery, reduction of the total fixed costs per ha and work hour, and all this leads to an increase in income of the family farm (Munćan et al., 2008).

The region of Vojvodina is characterized by the lowest share of small holdings (up to 5 ha) in the total land used (11.8%), and on the other side it has the majority of large holdings, particularly those over 50 ha, which account for about 3.5% of total number of family holdings and hold about 41% of utilized agricultural area. In other regions, the presence of the largest holdings is significantly lower, in the Belgrade region it is only 0.2% of family holdings (with about 8% of the UAA). In the region of Šumadija and Western Serbia largest holdings account for only 0.1% and dispose with 1.5% of UAL, and in the region of Southern and Eastern Serbia - 0.1% holding only 3.7% of utilized agricultural area.

Compared with the average for the EU-27 countries, the family holdings in Serbia have unfavourable ownership structure (Table 2). In Serbia, there is a greater share of smaller-sized holdings/land properties, those up to 10 ha account for 91.8% of family households, and use about 52% of the UAA, and in countries of EU-27, holdings of this size account for 36.2%, and dispose with only 12% of UAA. In contrast, the largest family holdings, with an area of over 100 ha, in Serbia account for only 0.2% of the total number of holdings, and hold only 8% of utilized agricultural area, while in the EU-27 such holdings account for 2.7% of the total number of holdings, and hold 50.9% of UAA. The farm structure in the NMS of CEE today is characterised by a large number of small scale farms and a small number of large farms. Middle-sized market oriented farms are still less developed in comparison to the EU15 (Davidova and Fredriksson, 2007). Agriculture in majority of CEE countries remains characterised by highly dualistic operational structure (small number of farms produces most of agricultural output), (Juvančič, 2007; Lerman, 2001).

Table 2. Agricultural family holdings (FH) in Serbia by utilized agricultural area, according to the Agriculture Census in 2012 and EU-27 (2010), (in %)

Indicators	Family Holdings by UAA (ha)							
	0-2	2-5	5-10	10-30	30-50	50-100	> 100	Total
Serbia								
Number of FH	48.1	29.4	14.3	6.4	0.8	0.7	0.2	100
UAA (ha)	9.3	21.0	21.9	22.0	7.1	10.6	8.0	100
EU-27								
No of farms	5.2	20.1	10.9	10.6	3.3	3.3	2.7	100
UAA (ha)	2.4	4.4	5.2	12.6	8.8	15,7	50.9	100
Bulgaria								
No of Farms	83.1	8.2	2.9	2.6	0.8	0.8	1.5	100
UAA (ha)	3.2	2.0	1.6	3.7	2.6	4.5	82.4	100
Greece								
No of Farms	51.7	25.4	12.1	8.3	1.5	0.8	0.2	100
UAA (ha)	6.0	11.1	11.7	18.8	7.9	6.9	37.7	100
Hungary								
No of Farms	79.0	8.0	4.6	4.8	1.3	1.1	1.3	100
UAA (ha)	2.9	3.0	3.9	9.8	6.0	9.5	64.7	100
Romania								
No of Farms	74.3	18.8	4.7	1.4	0.2	0.2	0.4	100
UAA (ha)	12.9	16.8	9.1	6.1	2.4	3.9	48.9	100
Slovenia								
No of Farms	27.5	33.4	23.4	13.9	1.3	0.5	0.1	100
UAA (ha)	4.5	17.1	25.3	33.4	7.5	5.3	6.8	100

Source: Agriculture Census – 2012, SORS, Belgrade, 2014; EUROSTAT

It can be noted that in those EU member states in our immediate environment, participation of farms with less than 10 ha significantly exceeds the EU-27 average (while in Romania and Bulgaria, it exceeds the share of the small holdings in Serbia). However, these farms have a significantly smaller part of the UAA in relation to family holdings in Serbia (in Bulgaria and Hungary, only 6.8 and 9.8%, respectively). The exception is Slovenia, with

a relatively higher share of small holdings in the UAA (about 47%) and a small share of the largest farms (about 7%). The other selected members of the EU are characterized by a significantly higher proportion of farms with more than 100 ha, which in Bulgaria exceeds 82% and in Hungary 64%.

Regional analysis of the economic size of family holdings in the Republic of Serbia according to the size of land property

The most (45%) of family holdings in Serbia have the economic size of less than 2,000 Euros (Table 3). At the same time, only 0.2% of family holdings realize SO over 100,000 EUR. Broken down by regions, it is observed that the largest shares of economically weakest (poorest) holdings are in the region Southern and Eastern Serbia (51.6%) and least represented in the region of Vojvodina (39%). In contrast, the highest share of the economically strongest holdings, which realize over 100,000 Euros, is in the region of Vojvodina (0.75%), while their share in the region Southern and Eastern Serbia, as well as in the region Šumadija and Western Serbia is extremely low (0.02 and 0.04%, respectively).

Table 3. Structure of family holdings in Serbia by Standard Output (SO) intervals, according to the Agriculture Census in 2012 (in %)

SO (EUR)	Serbia-total	Belgrade Region	Vojvodina Region	Šumadija and Western Serbia Region	Southern and Eastern Serbia Region
0-2,000	45.19	47.55	39.09	43.61	51.61
2,000-4,000	22.52	21.72	18.64	23.61	24.08
4,000-8,000	18.19	17.44	16.49	20.31	16.64
8,000-15,000	8.49	8.76	11.04	9.04	5.73
15,000-25,000	2.91	2.88	6.07	2.34	1.31
25,000-50,000	1.76	1.29	5.21	0.86	0.50
50,000-100,000	0.74	0.27	2.71	0.18	0.10
100,000 and more	0.20	0.09	0.75	0.04	0.02
Total	100	100	100	100	100

Source: Authors' calculation according to Agriculture Census – 2012, SORS, 2014, Belgrade.

The largest part of the total SO of Serbian family holdings is generated on small holdings, the size of property of up to 2 ha (22.7%) and 2 to 5 ha (20.2%). The small holdings (up to 5 ha) in the region of Southern and Eastern Serbia have the highest share in generated SO (54%), (Table 4). By contrast, the largest family holdings in Serbia (over 100 ha) account for 5.5% of the total SO, with the largest share in the region of Vojvodina (10.9%) and the lowest in the region Šumadija and Western Serbia (0.2%).

Table 4. Structure of Standard Output (SO) of family holdings in Serbia by utilized agricultural area (UAA), according to the Agriculture Census in 2012 (%)

UAA (ha)	Serbia-total	Belgrade Region	Vojvodina Region	Šumadija and Western Serbia	Southern and Eastern Serbia
< 2	22.7	18.6	28.3	15.9	21.0
2-5	20.2	28.2	7.9	30.5	32.9
5-10	19.5	24.8	10.2	29.9	25.2
10-30	18.8	18.2	18.8	20.5	16.0
30-50	5.6	3.7	9.2	2.0	2.5
50-100	7.7	2.1	14.7	1.1	1.5
> 100	5.5	4.4	10.9	0.2	0.8
Total	100	100	100	100	100

Source: Authors' calculation according to Agriculture Census – 2012, SORS, 2014, Belgrade.

The standard output per family farm in Serbia is 5,492 EUR (Table 5). The average economic size of holdings in Serbia, measured by the standard income is 4.6 times lower than the economic size of holdings in EU-27 – 25,450 EUR (Eurostat). Among the selected countries - EU member states in the region, only in Romania the average size of output per holding (2,700 EUR) is lower (approximately by 50%) compared to the Serbian average, while in other countries it is higher, in Slovenia (12,245 EUR) 2.2 times, in Greece (9,267 EUR) and Hungary (9,086 EUR) in each by about 70% and in Bulgaria (6,847 EUR) by about 25% (Eurostat, EC). The average economic size of family holdings, by regions, is the largest in Vojvodina (11,156 EUR) and twice the average for Serbia, but 2.2 times lower than the average of EU-27. The lowest economic size, i.e. the standard output per holding, is characteristic of family holdings in the region of Southern and Eastern Serbia (3,207 EUR), lower by 42% compared to the Serbian average, or about 8 times lower compared to the average for the EU-27.

Table 5. Basic indicators of economic size of family holdings in Serbia, by UAA intervals, according to the Agriculture Census in 2012 (EUR)

UAA (ha)	Serbia-total		Belgrade Region		Vojvodina Region		Šumadija and Western Serbia		Southern and Eastern Serbia	
	SO/FH	SO/ha UAA	SO/FH	SO/ha UAA	SO/FH	SO/ha UAA	SO/FH	SO/ha UAA	SO/FH	SO/ha UAA
< 2	2,595	2,973	1,489	1,805	6,282	9,892	1,477	1,537	1,319	1,376
2-5	3,768	1,171	4,209	1,330	4,543	1,410	3,755	1,152	3,342	1,055
5-10	7,489	1,091	9,271	1,373	8,761	1,249	7,448	1,086	6,277	926
10-30	16,114	1,047	19,498	1,292	18,979	1,139	14,760	1017	12,238	842
30-50	36,126	956	252,606	1,191	36,985	972	34,343	932	29,642	801
50-100	62,321	881	64,380	1,002	63,030	882	60,022	1,001	47,051	709
> 100	138,323	837	291,061	1,166	137,593	844	95,197	635	102,440	526
Total	5,492	1,222	4,378	1,377	11,156	1,386	4,105	1,137	3,206	1,005

Source: Authors' calculation according to Agriculture Census – 2012, SORS, 2014, Belgrade

The analysis of the economic size of the family holdings in respect to the size of property indicates that it is the largest, in all regions, in holdings with over 100 hectares, followed by those with 50-100 ha. The exception is the Belgrade region, where the family holdings with 30-50 ha hold the second place, according to the economic size.

The economic size of the holding, or the standard output per hectare of utilized agricultural land in the country (1,222 EUR) is by 31% lower than the average in EU-27 countries (1,770 EUR). Only Slovenia (1,892 EUR) and Greece (1,294 EUR) of the selected countries - EU member states in the region, achieve higher SO per hectare (54% and 6%) compared to the average of Serbia. Family holdings in the region of Vojvodina are characterized by the highest standard of output per hectare UAA (1,386 EUR), and holdings in the region of Southern and Eastern Serbia have the lowest economic size measured by this indicator (1,005 EUR). The SO per hectare of UAA reduces with the increasing size of the property, which can partly be explained by more extensive type of production on large properties (grain, forage and industrial crops) compared to highly intensive production, which is typically organized on small-size agriculture properties (vegetables and fruits).

Regional analysis of labour force in family holdings of the Republic of Serbia, according to the property size

According to the 2012 Census of Agriculture, total labour force in family holdings in Serbia is approximately 1.4 million people. Almost the entire contingent of labour force on holdings (about 99.9%) is the farm owners and members of their households (except those who only work part time on the farm).

Owners/keepers of households account for about 44% of the family labour force in agriculture, mostly in the region of Vojvodina, about 52% (Table 6). Other family members, at the level of Serbia, are present with about 56%, with the highest share in the region Šumadija and Western Serbia (58%) and approximately the same percentage in the region Southern and Eastern Serbia. Permanently employed labour force in family holdings is mostly present in Vojvodina region (0.4% of persons), followed by the Belgrade region, while in the remaining two regions, its involvement is extremely low.

Due to the significant participation of persons who partially/temporary (usually seasonal) work on holdings, farm labour force in agriculture can be successfully analysed on the basis of data on the AWU, and a better insight into the utilization of existing employment potential in agriculture of Serbia can be gained.

The total number of annual work units (equivalent of persons employed full time throughout the year) in family holdings in 2012, amounts to 618,054. Family labour has a dominant share as measured by this indicator and it amounts to about 95% (46% are carriers of households and 49% other family members). Permanent workers who are not members of households account for 0.2% AWU, with the largest share of 0.7% in the region of Vojvodina. Seasonal and labour employed under the contract represent 4.8% of the total labour force in family holdings in Serbia. Seasonal work force and work force engaged

under contract in family holdings is mostly present in the region of Vojvodina (about 6.7% AWU) and the least in the region of Southern and Eastern Serbia (3.6%).

Table 6. Labour force at family holdings in Serbia, according to the Agriculture Census in 2012 (persons and AWU, 000)

Labour force (LF) at family holding (FH)	Serbia-total		Belgrade Region		Vojvodina Region		Šumadija and Western Serbia Region		Southern and Eastern Serbia Region	
	Persons	AWU	Persons	AWU	Persons	AWU	Persons	AWU	Persons	AWU
Family labour force	1,414	587	74	29	277	109	625	270	439	179
-holders of FH	617	284	33	15	143	61	258	124	183	83
-other family members	797	304	41	15	134	47	367	146	255	96
Regularly employed labour	1.8	1.3	0.05	0.03	1.2	0.93	0.25	0.17	0.27	0.16
Seasonal workers	-	29	-	1.4	-	8.7	-	12	-	6.5
Contractual workers	-	0.63	-	0.02	-	0.35	-	0.17	-	0.09
Total	1,416	618	74	34	279	135	625	285	439	188

Source: Agriculture Census – 2012, SORS, 2014, Belgrade.

The analysis of labour force in family holdings of different sizes in Serbia indicates that its largest contingent, in all regions, is located on small holdings, the size of property of up to 5 ha. On average, about 73% of the total number of persons, or 61% of AWU is concentrated on these holdings (Table 7). Closely related to the fragmented ownership structure is the manifested excess labour on holdings and incomplete use of family labour force, almost throughout the year, which is why there is a need and trend of employment of some household members outside the household (Todorović et al., 2009). In contrast, the largest holdings, with over 50 ha, have less than 1% of individuals and 1.8% AWU.

Table 7. Structure of labour force at family holdings in Serbia, by UAA intervals, according to the Agriculture Census in 2012 (in %)

UAA (ha)	Serbia-total		Belgrade Region		Vojvodina Region		Šumadija and Western Serbia		Southern and Eastern Serbia Region	
	Persons	AWU	Persons	AWU	Persons	AWU	Persons	AWU	Persons	AWU
< 2	41.87	29.09	47,53	34.46	44.85	30.17	37.64	25.61	45.06	32.79
2-5	30.99	32.64	31,29	34.33	19.64	18.06	34.27	36.01	33.48	36.53
5-10	17.04	22.30	14,63	20.33	14.37	17.21	19.77	25.74	15.24	20.65
10-30	8.16	12.48	5,75	9.35	13.46	20.44	7.86	11.80	5.64	8.95
30-50	0.99	1.69	0,53	0.93	3.47	5.92	0.36	0.64	0.40	0.73
50-100	0.71	1.30	0,18	0.34	3.10	5.82	0.09	0.19	0.15	0.28
> 100	0.24	0.50	0,09	0.26	1.12	2.38	0.01	0.02	0.03	0.08
Total	100	100	100	100	100	100	100	100	100	100

Source: Authors' calculation according to Agriculture Census – 2012, SORS, 2014, Belgrade.

The Belgrade region and the region of Southern and Eastern Serbia have a dominant share of the labour force in small holdings (up to 5 ha) in excess of 78% i.e. AWU. The lowest representation of labour on the properties of up to 5ha is specific to the region of Vojvodina (about 64%). This region is characterized by the highest share of the workforce concentrated in large holdings (over 50 ha, exceeds 3%, and expressed in AWU this share was 5.8%).

The standard output per person in Serbia is 2,437 Euros and per AWU it reaches about 5,586 Euros (Table 8). With increasing size of holdings also the amount of generated SO increases, so that holdings larger than 100 ha realize the amount of 56,230 Euros per person, or 61,108 Euros per AWU. They are technically well-equipped holdings which achieve above-average productivity. The highest value of SO is achieved by such holdings in the Belgrade region, followed by the region of Vojvodina, and the lowest in the region of Southern and Eastern Serbia (34,391 Euros per person, which is about 32 thousand Euros per AWU).

Table 8. Standard output (SO) per person and per AWU, by UAA intervals, according to the Agriculture Census in 2012 (in EUR)

UAA (ha)	Serbia-total		Belgrade Region		Vojvodina Region		Šumadija and Western Serbia Region		Southern and Eastern Serbia Region	
	SO/ person	SO/ AWU	SO/ person	SO/ AWU	SO/ person	SO/ AWU	SO/ person	SO/ AWU	SO/ person	SO/ AWU
< 2	1,324	4,367	767	2,519	3,693	12,907	726	2,360	636	2,063
2-5	1,586	3,452	1,774	3,848	2,370	6,059	1,531	3,224	1,346	2,911
5-10	2,796	4,895	3,336	5,713	4,139	8,124	2,602	4,422	2,263	3,941
10-30	5,619	8,424	6,206	9,093	8,180	12,661	4,485	6,603	3,892	5,790
30-50	13,679	18,356	13,567	18,372	15,556	21,427	9,561	11,818	8,611	11,158
50-100	26,434	32,846	22,751	29,160	27,799	34,870	20,320	22,195	14,291	17,595
> 100	56,230	61,108	95,572	79,240	56,966	62,721	26,103	30,715	34,391	31,856
Total	2,437	5,586	1,965	4,678	5,855	13,765	1,720	3,805	1,368	3,228

Source: Authors' calculation according to Agriculture Census – 2012, SORS, 2014, Belgrade.

One indicator of the structure of family holdings is the number of AWU per farm. According to 2012 Census, in Serbia, number of AWU per family holding is 0.98 (Table 9), which is about 20% higher than the average of EU-27 (where the agricultural holding uses on average 0.81 AWU). Only holdings in Bulgaria (1.09) and Slovenia (1.02), of the selected EU countries, have a higher number of AWU per farm compared to the average of Serbia. The Vojvodina region is characterized by the same number of AWU per family holding as for EU-27. The highest number of AWU per family holding is characteristic of the region Šumadija and Western Serbia (1.08).

Table 9. Productivity of labour on family farms in Serbia (AWU/FH and AWU/ha UAA), by UAA intervals, according to the Agriculture Census in 2012

UAA (ha)	Serbia-total		Belgrade Region		Vojvodina Region		Šumadija and Western Serbia		Southern and Eastern Serbia Region	
	AWU/ FH	AWU/ UAA	AWU/ FH	AWU/ UAA	AWU/ FH	AWU/ UAA	AWU/ FH	AWU/ UAA	AWU/ FH	AWU/ UAA
< 2	0.594	0.681	0.591	0.716	0.487	0.766	0.626	0.652	0.640	0.667
2-5	1.092	0.339	1.094	0.346	0.750	0.233	1.165	0.358	1.148	0.363
5-10	1.530	0.223	1.623	0.240	1.078	0.154	1.685	0.246	1.593	0.235
10-30	1.913	0.124	2.144	0.142	1.499	0.090	2.235	0.154	2.114	0.146
30-50	1.968	0.052	13.750	0.065	1.726	0.045	2.906	0.079	2.656	0.072
50-100	1.897	0.027	2.208	0.034	1.808	0.025	2.704	0.045	2.674	0.040
> 100	2.264	0.014	3.673	0.015	2.194	0.013	3.099	0.021	3.216	0.017
Total	0.983	0.219	0.936	0.294	0.810	0.101	1.079	0.299	0.993	0.311

Source: Authors' calculation according to Agriculture Census – 2012, SORS, 2014, Belgrade.

The existing ownership structure significantly affects the productivity of labour in agriculture of Serbia, which can be perceived through the number of hectares of agricultural land that is cultivated/used by single AWU. Thus, in the EU-27, on average, single AWU is processing 16.7 ha of agricultural area and in family holdings in Serbia 4.6 ha. It can be concluded that the labour productivity, as measured by this index, in Serbian agriculture is by 3.6 times lower than the average for the EU-27. All selected countries in the region, members of the EU-27, achieve higher labour productivity in agriculture in relation to family holdings in Serbia, measured by the above indicator, where on average one AWU cultivates 11 ha of UAA in Hungary and Bulgaria, 8.3 ha in Romania, followed by 8.1 ha in Greece and 6.3 ha in Slovenia.

The relatively high labour input is in Slovenia (16.2 AWU/100 ha in 2011), in Poland (14.5 AWU/100 ha in 2011), in Greece (12.3 AWU/100 ha), in Romania (11.8 AWU/100 ha), in Portugal (9.9 AWU/100 ha), in Hungary (9.2 AWU/100 ha) and in Bulgaria (9.1 AWU/100 ha in 2011). Malta and Cyprus have also high labour input but they are not agriculturally important countries within the EU. These countries use more on-farm manual workers. This disproportion in labour input causes the low level of income indicators per AWU (Spicka, 2013).

With the increasing size of the land property, evident is the increase of productivity of family holdings in Serbia. On the largest holdings (over 50, or 100 ha), it exceeds the average level of productivity achieved in the agriculture of the EU-27. It is reasonable to expect that these holdings can be competitive to holdings in the EU.

Broken down by region, in Serbia, favourable ratio of labour force expressed in AWU and used agricultural land (indicating the highest level of labour productivity) exists in the region of Vojvodina, where on the family holdings one AWU is processing on average 9.9 ha of agricultural area, which is over two times more than the national average, but it

is by about 10% lower than the average for the EU-27. In comparison to the EU member states from the region, realized labour productivity on holdings in the region of Vojvodina is higher, except when compared with farm holdings in Hungary and Bulgaria. Low labour productivity in agriculture in Serbia, measured by these indicators (five times less than the average of EU-27) is present in the region of Southern and Eastern Serbia, and Šumadija and Western Serbia, reflecting the particularly unfavourable agrarian structure of the region.

Conclusion

The Republic of Serbia is territorially very heterogeneous in terms of economic development of certain regions and family holdings in them differ significantly in regard to the ownership structure, available labour force and its structure, as well as economic size. Unfavourable ownership structure significantly determines the efficiency of operations in agriculture and it seems that the agriculture in Serbia, in many areas, in the face of increasing competition, cannot be competitive in the market, especially highly developed economies. Family holdings with over 100 ha of land in Serbia account for only 0.2% of the total number, and have only 8% of UAA, while in the EU these holdings account for 2.7% of the total number, and dispose with 50.9% of UAA. The family holdings in the region of Vojvodina have the most favourable ownership structure, where the largest farms make up 0.9% of the total number and hold in their possession approximately 18% of UAA.

The standard output per family holding in Serbia is 5,492 EUR and it is 4.6 times lower than the average economic size of holding and the EU – 25,450 EUR, and lower than the value of this indicator in all selected countries - EU member states (Bulgaria, Hungary, Greece, Slovenia) in the region, except in Romania. The average economic size of family holdings, by region, is the largest in the region of Vojvodina (11,156 EUR) and it is twice the Serbian average, but 2.2 times lower than the EU average, and above the level achieved in selected countries in the region, with the exception of Slovenia. The lowest economic size, i.e. the standard output per holding, is characteristic of family holdings in the region of Southern and Eastern Serbia (3,207 EUR), and it is lower by 42% than the Serbian average, or about 8 times lower compared to the average for the EU-27.

Number of AWU in Serbia per family holding is 0.98, which is by about 20% higher than the average for the EU, where the family holding uses on average 0.81 AWU. The Vojvodina region is characterized by the same number of AWU per family holding as the EU average, however, the highest number of AWU is characteristic of the region of *Šumadija* and Western Serbia 1.08.

The current ownership structure significantly affects the productivity of labour in agriculture of Serbia. In the EU, on average, single AWU processes 16.7 ha of agricultural area and in family holdings in Serbia 4.6 ha. The labour productivity, as measured by this index, in Serbian agriculture is 3.6 times lower than the EU average. All selected countries - members of the EU-27, in the region, achieve higher labour productivity in agriculture in relation to family holdings in Serbia, measured by the above indicator. Broken down by region, in Serbia, the highest level of labour productivity is achieved in the region of Vojvodina, where, on the

family holdings, one AWU processes on average 9.9 ha of agricultural area, which is more than twice the national average, but it is by about 10% lower than the average for the EU27. Compared with the realized labour productivity on farms in selected EU member states in the region, family holdings in the region of Vojvodina, as measured by the above indicator, have higher labour productivity, except compared to Hungary and Bulgaria. The lowest labour productivity in agriculture in Serbia, measured by these indicators (five times lower than the EU average) is present in the region of Southern and Eastern Serbia, and the region of *Šumadija* and Western Serbia, reflecting a very unfavourable agrarian structure of the region.

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REGIONALNI ASPEKTI STRUKTURNIH PROMENA NA PORODIČNIM GAZDINSTVIMA REPUBLIKE SRBIJE

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Apstarkt

Polazeći od značaja koji veličina poseda ima za razvoj poljoprivrede i njenu efikasnost, u radu je analizirana posedovna struktura, njena međuzavisnost sa raspoloživom radnom snagom (broj lica i godišnje radne jedinice) i ekonomskom veličinom porodičnih gazdinstava. S obzirom da je teritorija Republike Srbije veoma heterogena u pogledu dostignutog stepena privredne razvijenosti pojedinih regiona, kao i raspoloživih potencijala za razvoj poljoprivrede, to su navedene strukturne promene analizirane na nivou četiri regiona: Region Vojvodine, Beogradski Region, Region Šumadije i Zapadne Srbije, i Region Istočne i Južne Srbije. Ključni pokazatelji strukture poridičnih gazdinstava Srbije prikazani su i u komparaciji sa prosekom za EU-27. Cilj rada je da se sagledaju osnovni aspekti strukturnih promena na porodičnim gazdinstvima, polazeći, prvenstveno, od veličine poseda, raspoložive radne snage, ekonomske veličine, kao i njihove regionalne raznolikosti.

***Ključne reči**: porodično gazdinstvo, region, posedovna struktura, ekonomska veličina, radna snaga.*

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DIFFUSION OF KNOWLEDGE AND RURAL TOURISM DEVELOPMENT – EXAMPLE OF VOJVODINA[1]

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Summary

Changes in contemporary rural space have influenced new perception of rural way of life. This has affected changes in economic reproduction of rural communities towards diversification. Rural tourism is one of the possible directions in achieving it. As a form of innovative rural economic practice, rural tourism should be based on diffusion of knowledge and information (DKI). Therefore, extension service can be of a great assistance in rural tourism development.

The authors have pointed out characteristics of extension work in rural tourism in Vojvodina. The research results have showed that even though professional help has been identified as a main factor of rural tourism development, there are several obstacles in extension activities in rural tourism development (managerial, financial). In the conclusion, the authors have emphasized the necessity of strengthening visibility and recognition of extension service in rural tourism development.

Key words**:** *diffusion of knowledge, extension service, rural tourism, Vojvodina.*

JEL: *D83, I25, Q16*

Introduction

Travelling and tourism entails changes of physical space, but social relations, also. Both of them are essential in understanding tourist motivation, needs and expectations, but also in recognizing the hosts` ability to indulge them.

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For the last three decades, global (rural) sociology has been showing rising interest in rural tourism.[5] It arose from the analysis of needs and models of rural development and corresponded with the new theoretical paradigms in understanding contemporary rural way of life. In present-day Serbian science, rural tourism has mostly been the issue of agricultural economic analysis or analysis of tourism researchers, geographers, etc. Most of them dealt with the issues of rural tourism statistics, its natural and social development potentials (Bošković et al., 2013; Đukić Dojčinović, 1992; Košić, 2012; Stankov, 2007; Todorović, Bjeljac, 2007; Todorović, Štetić, 2009), destinations and offer in rural tourism[6], benefits from rural tourism (Đurović, Cvejić, 2011; Đorđević Milošević, Milovanović, 2013; Muhi, 2010; Stankov, 2007; Radovanović, 2010), marketing in rural tourism (Muhi, 2009), public-private partnership in rural tourism (Bogdanov, Zečević, 2011), etc. There are few analyses in Serbian (rural) sociology dealing with the specified issue (Markov, 2006; Rajković, 2012; Šljukić, Šljukić, 2011). Therefore, by focusing on diffusion of knowledge and information (further: DKI), we tried to point out the significance and possible outcomes of a sociological perspective in researching rural tourism.

Rural tourism from the sociological perspective: basic concepts

One of the key sociological subjects of interest is the relation between society and space. Space is one of the four dimensions of social structure, therefore, *conditio sine qua non* of societies. In sociology, space is understood as both physical and social (Tripković, 1998; Vujović, Petrović, 2005; Lefebvre, 1991). The type of social interaction influences the type of social space and *vice versa*. Sociologists often speak of differences between urban and rural space, but also the interactions. Contemporary rural space profoundly differs from a traditional one. Rural communities, especially in developed societies, are integrated within global society, mostly by exchange of various forms of capital. They depend on global societies, but also influence them. Therefore, contemporary transformation of rural space (Marsden, 1998) deeply transforms rural way of life.

How does it imply on rural tourism? Sociological analysis of rural tourism begins (and ends) with the analysis of rurality, as a specific type and structure of social relations. Opportunities for development of rural tourism, the way they are experienced, evaluated and, consequently, used are under direct influence of characteristics of rurality. Rurality also is influenced, among other, by characteristics of rural space. Nowadays, we emphasize transformation and multifuncionality of rural space. It is not only the place of production (of food and raw materials), especially in developed societies. As Bessière wrote (1998),

5 Since 1980`s, *Journal of Rural Studies,* currently the most respectable journal in Rural Sociology, has published almost 600 papers on tourism in rural areas. One of the most respectable European rural sociological journals, *Sociological Ruralis*, in the same period, has published more than 250 articles relating to rural tourism. Since 1990, *Rural Sociology*, journal of the *Rural Sociology Section* of *The American Sociological Society,* has published more than 100 papers on rural tourism.

6 References on this subject are numerous. See: http://libdgt.pmf.uns.ac.rs/, http://www.vbs.rs/scripts/cobiss?id=1009426014713288,http://scindeks.ceon.rs/SearchResults.aspx?query=ARTAK%26and%26ruralni%2bturizam&page=0&sort=1&stype=0

contemporary rural areas are "*places for entertainment, leisure activities, second homes and as an alternative to urban residential areas*". Hirschman and Holbrook (1982) called them locus of hedonistic consumption.

Structures of the contemporary rural communities change due to their specifics, which influence rural social vitality (Čikić, 2013). Changed dynamics of rural space enable rural communities to reproduce in a new manner. This implies the creation of new social roles and relations, new economic activities, new rural culture, etc. Reproduction of contemporary rural communities (especially, economic reproduction) enables, but also requires diversification, which originate from the characteristics of rural space and rurality. Rural tourism is one way in achieving it. It is not a brand new phenomenon. In the post-modern societies, it reaches new meaning and importance. Even in the era of globalization (or in spite of it), rural way of life remains specific which becomes appealing to tourists, foremost, the ones who have not experienced a rural way of life on a daily basis. Therefore, pull-push mechanisms create market niches for development of rural tourism (George et al., 2009). Derived from the specific potentials of ruralilty, rural tourism has a potential to contribute to rural economy renewal and rural community development.

Diffusion of knowledge and information and rural tourism development

Sociological analysis of rural tourism has several focal points: a) social causes of rural tourism development, b) social repercussions of tourism development for the rural communities, but also society in general, c) stakeholders in rural tourism development, d) trends in rural tourism development, etc. Interpretation of rural development as result of interactions between endogenous potentials and support from the outside of the community enables contemporary sociology to point out innovations[7] as a driver for the rural modernization. This is particularly suitable for examining rural tourism.

Since it stands out from the typical/traditional rural economic activities, we hereby think of rural tourism as a form of innovative rural economic behaviour. As a form of experience economy (Pine, Gilmore, 1998), rural tourism development acquires continuous creation and diffusion of relevant knowledge and information (Rogers, 1995; Wejnert, 2002). This is where sociological perspective starts. First, DKI is crucial element in functioning of contemporary societies or cognitive capitalism, as Vercelone (2005) identified them. It gets more important when society has the interest in the subject/area. In addition, DKI is especially interesting under the conditions of heterogeneous knowledge sources and multiple communication channels. The researches of DKI in various areas of interest showed that in the early stages of development, DKI has one of the major roles as a driver of change (Rogers, 1995). Thirdly, DKI is not a linear process. It means interaction and networking, which implies the creation of multiple connections between stakeholders. Thus, DKI (potentially) benefits to all.

7 By innovations, we do not think only of new technologies. Innovations imply thinking outside of the box. It is a new way of combining resources in order to enable flexibility of the system. It is a trigger for modernization (Čikić, 2013). Our concept of innovation is close to one given by Leeuwis (2004) or Schumpeter`s (2004).

Why are we exploring DKI in rural tourism development? First, there are several studies emphasizing specifics and problems in (rural) tourism - innovation relation: lack of systematicity, lack of R&D-based innovations, etc. (Brandth et al., 2010; Hjalager, 2010, Miles, 2005, Najda Janoszka, Kopera, 2014; Rønningen, 2010; Williams, 2007). Second, (rural) tourism is a highly competitive sector, which requires innovation in order to survive and be profitable. Thus, DKI contributes to the improvement and variety of service quality in rural tourism. As o form of niche tourism (Novelli, 2005), the success of rural tourism *"rests upon a management perspective that focuses upon the dual innovative and entrepreneurial skills of the owner of the tourism organization and his/her ability to respond to the fast-changing sophisticated expectations of experienced tourists"* (Carlisle et al., 2013). Thirdly, characteristics of human resources heavily influenced outcomes of rural tourism, as an experience economy. DKI is focused on building it up. Furthermore, DKI enables exchanges of information and experiences. It facilitates dialogue in problem solving. Therefore, DKI assists in the formation, functioning and development of rural tourism stakeholders` network (Caalders, 2002). On the other hand, networking facilitates creation of innovative milieu, necessary for development of rural tourism.

Societies with strong interest in rural tourism strategically guide its development by implementing adequate measures. This is why we speak of DKI in rural tourism through the experience of extension service. We should bear in mind that extension changes along with the changes in the rural way of life and rural economy. Jones and Garforth (1997) and Rivera (2001) argued that contemporary reforms of extension put focus on rural people in general, not only on those engaged in farming. Nowadays, extension is not only about raising yields, but, it "*seeks outcomes of capacity building and resilience in individuals and communities*" (SELN, 2006). Being focused on rural issues, contemporary extension service plays a major role as a broker within the rural tourism stakeholders` network.

Therefore, the goal of this paper is to address some issues regarding the role of extension service in rural tourism development. We advocate that rural extension can be valuable for the rural tourism development, but it`s contribution depends on internal (staffing, management, motivation, finances, etc.) and external factors (governmental support, characteristics of the clients/rural hosts, characteristic of actors` network in rural tourism, etc.). As a case study, we have chosen Agricultural Extension Service in Vojvodina (further: AESV[8]). Our basic hypothesis is that AESV has limited potentials for providing professional support to rural tourism development, due to the insufficiencies in both internal (managerial) and external (mostly, financial) factors.

8 AESV is a public extension service, mostly engaged in providing professional support in farming. Nevertheless, for the last decade, a part of AESV agents has been engaged in rural extension, providing advices in rural tourism, empowerment of rural women and rural youth, etc.

Method and data resources

We focused our analysis of the DKI in rural tourism development in Vojvodina because of: a) tradition in rural tourism[9], b) tradition in extension practice and c) significant expectations from rural tourism regarding rural development in Vojvodina. The analysis is based on empirical data collected within the project `*The role and significance of Agricultural Extension Service of Autonomous Province of Vojvodina in development of rural tourism*`[10]. The research covered the total scope of all AESV agents (90). Data were collected based on the original questionnaire consisting of questions relating to the: a) general information about extension agent, b) development of rural tourism in Vojvodina and c) role of AESV in rural tourism development.

Rural tourism in Vojvodina

In the last three decades, post-socialist transition of Vojvodina brought up significant changes in rural social structure. Nowadays, most of the rural communities are lacking social vitality and, therefore, losing social attractiveness. In order to improve rural quality of life, state/government recognized diversification as a model for rural economy revival (MAFWM, 2013). It entails both agricultural and non-agricultural activities. Hereby, we speak of diversification out of farming. Defined as "*all rural income generation other than food production*" (Davis, Bezemer, 2003), diversification entails various economic activities based on local potentials and advantages of family farms/rural communities. Rural tourism is only one of the possible directions in achieving it[11].

According to census data (Statistical Office of the Republic of Serbia, 2013), 93 farms in Vojvodina provide services in rural tourism[12]. Most of them are located in Srem (21%) and South Bačka area (20%). The most important are: *salaši,* rural households providing services of food, traditional rural manifestations, ethno-houses and rural/folk architecture. Even though emphasizing natural and social potentials for rural tourism development in Vojvodina, Košić (2012), Stankov (2007), Ćurčić, Pavlović (2011), Đurović, Cvejić (2011) also wrote of underdeveloped and underused capacities in rural tourism. General conclusion is that additional services in rural tourism are underdeveloped which makes difficult to gain additional profit[13].

9 Even though rural tourism development in Vojvodina has been intensified in the last decade, according to Košić (2012), it has tradition over 35 years long.

10 Secretary for Agriculture, Water Management and Forestry of Autonomous Province of Vojvodina has financed the project (*Role and Significance of Agricultural Extension of Vojvodina in Development of Rural Tourism,* No. 104-401-2840/2013).

11 We can also speak of production and retail of local products, whether they are based on local, traditional crafts and arts or on adding value to agricultural products. Also, diversification of non-farming activities entails endeavours in renewable energy resources market (e.g. biomass), small, mostly family business in the industry or services, etc.

12 They make $^{1}/_{5}$ of all farms engaged in rural tourism in the Republic of Serbia. In Vojvodina, there are also 73 registered farms involved in handicraft, activity complementary with tourism.

13 Nevertheless, Đurović and Cvejić (2011) argued that, even though underused, capacities in Vojvodinian rural tourism are more employed than ones in rural tourism in Central Serbia.

(Under)development of rural tourism derives from various social factors (Wilson et al., 2001). The intensity of their influence depends on the development and characteristics of rural tourism, but also general characteristics of (rural) social structure. In the case of rural tourism in Vojvodina, we can speak of insufficient: a) financial resources (lack of investments and lack of financial flow from rural tourist), b) institutional support and institutional/individual interest in rural tourism, c) promotion of rural tourism, d) education of rural hosts, e) tourist infrastructure and f) inadequate strategies and legal framework. Those factors significantly contributed to its non-recognition, lesser quality of services and, consequently, low income.

Even though people often think that providing services in (rural) tourism is a piece of cake, the practice often shows quite an opposite. Success in rural tourism requires complex knowledge and skills in many different aspects: "*marketing, hospitality, catering, heritage interpretation and guidance, visitor management, festival and event promotion, building conversion, in rural tourism strategy planning itself*" (OECD 1994, 44). Why are knowledge, skills and information vital for rural tourism development? First, knowledge and skills are not important only for providing a specific service in rural tourism. They are, together with the broader set of information, vital to advance in entrepreneurial behaviour in rural tourism. In order to understand the significance of knowledge, skills and information on rural tourism development, we must take a step back. Rural hosts provide and, more importantly, sell an experience. Whether tourist visits rural areas for relaxation and fun, to learn, to have an adventure or for personal growth and a sense of identification, they seek for an experience. Rural tourism provides both dimensions of experience: a) participation in the experience (e.g. cooking traditional dishes, participating in farm activities) and b) connection with the event and/or rural hosts. As a form of experience economy, rural tourism must provide memorable and completely personalized offer (Pine, Gilmore, 1998). Otherwise, business of rural tourism is no long-term sustainable. This leads us to the question: what makes the authenticity and experience in rural tourism? Is it "*landscape, wildlife, ..., air quality, ...*, *rural settlements* (in terms of rural architecture – N.A.), ..., *historical features, ...,water quality...*, *distinctive local customs, languages, costumes, foods, crafts, festivals, traditions, ways of life* (Garrod et al., 2006)? Or, is it the knowledge and skills of rural hosts to manipulate with the countryside capital (Garrod et al., 2006) and create a preferable environment for the rural tourists? We argue for the second. According to Lyck (2010) "*human resources are of decisive influence for successful implementation of experience economy*". Only qualified staff can have good consumer knowledge, which enables them to understand and fulfil, but also to assume the tourists` needs.

Extension service and rural tourism development in Vojvodina

As we are aware of, there are no comprehensive studies dealing solely with the issue of knowledge and skills of rural hosts in Vojvodina/Serbia. Nevertheless, some authors, while analyzing other issues, wrote of insufficient professional knowledge and skills in providing services in rural tourism (Đurović, Cvejić, 2011; Stanojević, Manić, 2009, Đukić Dojčinović, 1992; Košić 2012). Also, in *Programme of development of sustainable rural tourism in the Republic of Serbia* (2011), development of human capital in rural tourism is pointed out as

one of the priorities[14]. Under such context, the role of professional help and support from extension service is of great assistance. Its role is getting more important when we take into account that in rural tourism, attempt to create and offer authenticity is in rural hosts`, mostly unprofessional, hands. They design experience based mostly on indigenous knowledge of local specifics and skills in providing services. Under such context, systematic and organized DKI can be crucial in building human resources.

According to our research results, for the last several years, $^{1}/_{5}$ of all AESV agents have provided professional help relating to rural tourism development in Vojvodina. Most of them (almost 60%) work in the areas with the most developed rural tourism offer in Vojvodina (north of Bačka, Srem, Fruška Gora, rural areas near Novi Sad). Data analyses showed that female agents are keener to be engaged in providing knowledge and information in rural tourism, as well as younger extension agents.

Development of rural tourism entails participation and cooperation of different stakeholders. They differ by internal characteristics and external relations with each other. As we have mentioned before, extension service plays the role of broker in the rural tourism development network by: a) providing professional help to all stakeholders, b) enabling communication within the network, c) strengthening stakeholders` social capital and d) facilitating diffusion of knowledge and information among them. Extension agents work with different clients providing professional support. So far, AESV agents have been providing advices relating to the rural tourism to farmers, farmers` associations, rural women, rural youth, wine makers, those with and without experience in rural tourism, etc. Different clients have had different requests for knowledge and information. Hence, AESV agents provided help regarding different aspects of rural tourism development (establishing business, tourism infrastructure, marketing and promotion, financial management, government incentives for the rural tourism development, farming as a complementary activity, creation of opportunities for the additional revenue from rural tourism, etc.).

The engagement of AESV in rural tourism development is generally determined by the level of its transformation from exclusively agricultural towards rural extension. By this, extension service traces changes of rurality. Internal and external factors influenced potential role of AESV in rural tourism development. By internal factors, we have understood general management issues in extension, such as management of human resources (staffing, motivation and education), finances, time management, task management, etc. External factors comprised characteristics of governmental support (to extension and rural tourism, as well), characteristics of the clients/rural hosts, characteristic of actors` network in rural tourism, etc.

14 Within the goals projected for the development of human capital in rural tourism, *Programme* (2011) especially emphasizes raise of the awareness of (rural) population on the rural tourism significance, permanent education for providing services in rural tourism and strengthening of rural women and youth`s capacities for rural tourism.

Even though AESV agents have marked professional assistance and help as factor with highest impact on improvement of quality, quantity and diversity of services in rural tourism[15], only half of them think that they should provide such assistance[16]. The AESV agents gave clear arguments why they should not be involved professionally in rural tourism development. First, most of them do not have sufficient knowledge and information about rural tourism. By vocation, AESV agents are experts in farming (crops, animal production, plant protection, fruit and wine growing, agricultural machinery, etc.), not in tourism. AESV agents have emphasized that improvement of rural tourism in Vojvodina is a complex issue. Accordingly, they have pointed out that tourism experts and economists should be dealing with such an issue. In addition, extension agents highlighted that they already have too many professional responsibilities. Additional professional tasks would only have a negative impact on the scope and quality of current extension work[17].

Among AESV agents there are three distinctive groups regarding the issue of future interest in extension work relating to the rural tourism development. Almost ½ of the AESV agents thought that such interest would increase in the next five to ten years. Those are mostly agents with previous experience in extension work relating to the rural tourism[18]. Second group comprises of indecisive agents (42%). Only 8% of AESV agents said that there would be no increase in interest for extension work in rural tourism.

Under restrictive rural/agrarian budget (which is likely to be for the next several years), reform of extension service even more depends on restructuring of its internal resources (human resources, organization of work, budgeting, networking). As the most important activity in strengthening the role of EASV in rural tourism development, extension agents have pointed out selection among currently employed agents in order to choose the ones

15 Besides rural hosts` improvement of knowledge, information and skills, extension agents highlighted adequate state policy measures and general/tourism infrastructure as most important factors in rural tourism development.

16 This result is closely connected to the issue of extension service`s reform. Namely, in order to establish modern extension service in Vojvodina, stakeholders (government, extension agents, experts, etc.) often discussed opportunities and obstacles in its reform. The reform is expected due to the structural and functional changes in agriculture and rural structure.

17 Even though not statistically significant, there is a difference between AESV agents with and without the experience in extension work relating to rural tourism development in their opinion on whether they should be providing such professional help. AESV agents with the experience in extension work related to rural tourism are more likely to think that currently employed agents should be providing professional advices in rural tourism.

18 The independent sample test has also shown significant difference of means of depended variable between observed groups of AESV agents (agents with experience in extension relating rural tourism: M=1.38, SD=0.74; agents without experience in extension relating rural tourism: M=2.12, SD=0.96; MD= - 0.74, 95%CI: -1.15 to -0.33 with eta square of 0.142). AESV agents who have been providing professional help relating rural tourism are keener to predict increase in interest in extension work regarding rural tourism in the next five to ten years, due to the direct insight in current state-of-art in rural tourism.

who are interested in extension work relating to rural tourism. Most of the AESV (57%) said that they are interested in providing professional help regarding rural tourism development. Those agents could be a potential group for selection, whereby estimation of the number of AESV agents should be based on the analysis of the rural hosts` needs and preferences for the systematic DKI.

According to the AESV agents, the second major factor of improvement of extension work in rural tourism development is increased available amount of finances for their professional engagement. Due to the previously mentioned restrictive state budget for extension service in general, the issue of finances raises issues of commercialization of extension work (Petrović, Janković, 2010) and alternative models of financing (e.g. project financing).

Thirdly, ¾ of the EASV agents emphasized necessity of upgrading the cooperation between extension service and local, regional and national authorities (especially those in rural tourism). Horizontal and vertical connections between stakeholders facilitate faster and superior information flow, which is crucial for the success of extension work. Besides, strengthening the actors` network in rural tourism in Vojvodina could contribute to the recognition of AESV as a referable institution in DKI and problem solving.

Conclusions

Politicians, but (rural) public also often lay high hopes in rural tourism. They think of it as a magic wand for all rural economic problems. There is no doubt that rural tourism could contribute rural economy renewal. However, rural tourism development requires a broad network of support, especially in its early stages of development.

The research results confirmed our basic hypothesis of insufficient internal/managerial and external/financial resources in improvement of AESV role in DKI in rural tourism. Even though extension work in rural tourism has been present for several years, AESV agents engaged in DKI in rural tourism have been facing (and still are) several problems relating to financing, lack of relevant knowledge and information (issue of area of expertise), too many other professional responsibilities, targeting in extension work.

There is no doubt that extension work has a significant role in the development and promotion of rural tourism. In order to improve the role of extension service as a broker in rural tourism stakeholders` network, it should be paid more attention on visibility and recognition of extension service (in our case, EASV) among rural hosts and other stakeholders in rural tourism. One of the ways to achieve it is to be precise when defining the target group of extension work. Due to the specifics of knowledge, skills and information in rural tourism as the content of DKI, extension work in rural tourism should be demand driven and tailor-made. Furthermore, the same principles should be applied in education and training of extension agents in rural tourism. Such approach should enable the rational use of the limited capacities of the extension service, especially under circumstances of social transition, economic crisis and restrictive rural/agrarian budget.

The research results have confirmed out thesis on importance of knowledge and information in rural tourism development. We advocate that knowledge and information have the same significance in rural tourism development as financial resources, if not even greater. They enable the creation of market advantages (Ventura, Milone, 2004) which are crucial for long-term sustainability of business. DKI, if properly conducted, majorly contributes to the reproduction of viable rural economy. Therefore, it benefits not only to those engaged in rural tourism, but also to the social vitality of rural communities.

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DIFUZIJA ZNANJA I RAZVOJ RURALNOG TURIZMA – PRIMER VOJVODINE

Jovana Čikić[19], Marica Petrović[20], Branislav Đurđev[21]

Sažetak

Promene u savremenom ruralnom prostoru uslovile su novu percepciju ruralnog načina života. Ovo je uticalo na promene u ekonomskoj reprodukciji ruralnih zajednica, prema diverzifikaciji. Ruralni turizam je jedan od načina njene realizacije. Kao oblik inovativnog ekonomskog ponašanja, ruralni turizam bi trebalo da bude baziran na difuziji znanja i inovacije (DZI). U ovom kontekstu, savetodavna služba može biti od velike pomoći u razvoju ruralnog turizma.

*Autori su istakli karakteristike savetodavnog rada u ruralnom turizmu u Vojvodini. Rezultati istraživanja su pokazali da, iako je profesionalna pomoć identifikovana kao jedan od glavnih faktora razvoja ruralnog turizma, postoji nekoliko prepreka u savetodavnim aktivnostima koje su usmerene na razvoj ruralnog turizma (menadžment, finansije). U zaključku, autori su istakli neophodnost jačanja vidljivosti i prepoznatljivosti savetodavne služ*be u razvoju ruralnog turizma.

Ključne reči*:** *difuzija znanja, savetodavna služba, ruralni turizam, Vojvodina.**

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GROSS MARGIN AS AN INDICATOR OF THE SIGNIFICANCE OF FARMER EDUCATION ON THE WCR RISK ASSESSMENT IN REPEATED SOWING[1]

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Summary

Western corn rootworm (WCR) appeared in Serbia in the late 80's and quickly spread, causing increasing losses. Monitoring showed that crop rotation gives good results. On the other hand, domestic animals require a lot of corn and considering the limited land-area, that often demands repeated sowing of corn (continuous cropping), consequently leading to higher pest damages. Through Farmer Field Schools, farmers were educated on WCR risk assessment of repeated corn sowing. The goal was to prolong corn production over years, presuming its higher profitability of production (gross margin). Calculations of production of wheat, corn and soybean on farms involved in education program in 2012, have shown that corn has the highest gross margin (92,047.50 RSD/ha), followed by soybean (72,410.00 RSD/ha) and wheat (59,510.00 RSD/ha). It could be concluded that farmer's best interest is to grow corn, when possible, in continuous cropping, with obligatory risk assessment.

Key words: *corn, western corn rootworm, production, gross margin, investment, cost, education.*

JEL: *Q12, Q16*

Introduction

The appearance of Western corn rootworm (WCR) in our country in the late 80`s and damage it has caused, has led to important changes in the way of corn production. Corn rootworm is biologically adapted to corn in repeated sowing. In the first year, its larvae finish developing on

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the corn root in June and in August adult females lay eggs in the field with corn. In the second year, the larvae are being sawed from the overwintering eggs. They feed on the corn roots in repeated sawing, so those larvae finish their development and the adult insects can start a new generation. WCR damage has brought up the question what is the most efficient way to suppress this pest. Considering the above mentioned, it is clear that it is enough to break the life and feeding cycle of the insects by changing a host plant, which is called crop rotation. The massive use of crop rotation in regions where farmers have specialized in growing corn as a monoculture has led to a decrease in area under corn in Serbia. Considering that farmers are not familiar with the ways to determine whether they need to take protective measures or not, it was done without knowing the real needs.

However, after 2000 in a large part of Serbia this damage has drastically decreased. The main reason for it was the negative effect of the climate conditions in 2000, the year with the lowest precipitation in the last 100 years and very high temperatures of air. Moreover, the massive use of crop rotation also affected the decrease in numbers of corn rootworm (Stanković, Sivčev, 2004).

Corn is an important crop in Serbia. It is well known that WCR has inhabited this region, but there have been no information about the damage this insect causes. There were no reliable data that would confirm pest status of corn rootworm in this part of Serbia. Over the past few years soybean has been grown more and more massively in this region. It is a common crop included in rotations with corn, but that is not an efficient way of suppressing Western corn rootworm (Gray et al., 1998).

The diversity of the plant and animal world is one of the most important factors and indicators of the WCR economic damage. It is the well-known fact that the rich plant diversity, WCR is the smaller problem for corn. This insect is number one pest in parts of the USA where soybean and corn are grown predominantly (for instance in Iowa, where on 13.2 million ha of arable land, 5 million ha is under corn and 3.5 million ha under soy), which indicates a poor biodiversity.

In Serbia, according to Agricultural Census 2012, corn is grown on 976,612 ha (grain corn plus 27,187 ha of corn for fodder), while wheat, sunflower, soy and alfalfa are grown on 602,844, 186,361, 181,684 and 103,316 ha, respectively (SORS, 2014). Considering this, we can conclude that Serbia has high crop diversity and, consequently, we can expect problems with corn rootworm to appear in smaller extent, mainly on a corn in continuous cropping. It could be concluded, that the high crop diversity undoubtedly decreases the potential for corn rootworm in this area to develop into a pest like the one in the USA.

In addition to plant diversity, especially the diversity of crops, the richness of animal life, especially the domestic animals also have an impact. Domestic animals, particularly pigs and poultry use a lot of corn which, considering the limited amount of land often means repeatedly sowing of corn (growing it as a long-term monoculture). Therefore the sowing structure in areas with intensive livestock production has increased portion of corn and consequently higher WCR damages. Accordingly, a large concentration of farms with intensive livestock production stimulates the production of corn in monoculture, even with the massive WCR

appearance and damage caused by it, especially having in mind farm structure in Serbia (Munćan, Živković, 2006).

For all these reasons, there was a need to monitor the number of WCR populations on farms in Serbia that are important producers of corn and soy. Considering the diversity of crops in these regions we pay special attention to corn and soy, which are potentially the most promising WCR hosts. We assume that WCR cannot fulfil its harmful potential due to a high biodiversity in this area and the regular use of crop rotation. Thus it is important to determine the population number and risk of damage on selected corn fields, as well as the significance of this one of the most destructive pests. Therefore there is a need for making and introducing a method for determination population density and having a reliable and economically viable method that would be a basis for implementing the ecological management of this harmful species. It is of great importance to test the models of knowledge transfer and training of both trainers and farmers.

The appearance of corn rootworm in our country has worried farmers very much. On the other hand, almost a geometric progression rate of damage caused by this pest has become a matter of interest of seed and pesticide companies. A very different method of control of this pest than the one in the US has showed as more efficient in our fields, because our agricultural conditions are different than the ones in the US Corn Belt.

Corn rootworm feeding & damage: crops are damaged by the adult and larval stage, but economically important are caused by larvae that live in the soil and feed on roots. Adult insects are polyphagous species and damage they cause are of secondary importance. Besides corn, they also feed on other crops from the family *Poaceae*, and plants from the families *Fabaceae* and *Cucurbitaceae* (Purdue University, 1995). Adult insects feed first on leaves, then the pollen, corn silk and the top of the corn. The first adult insects that appear in the vegetative stage of corn feed appear on leaves. Once the blooming starts, adult insects start feeding on the pollen and the corn silk. This is the time when a large number of them can be found on the tassel and silk. The feeding of adult insects does not affect the income from corn. That happens only when there are a lot of adult insects prior to pollination, which completely eat the corn silk so that the cob is bare in the pollinating period. That kind of feeding results in the appearance of rough or partially rough cobs.

This research was aimed to show that the *ecological approach* (systematic environmental protection) to solving the problem of corn rootworm protection in the conditions of a higher biodiversity is more important to farmers than other methods, because it is more efficient, cheaper, viable and *ecologically acceptable*. We assumed that crop rotation was more efficient, which has been tested on many corn fields with damage caused by WCR. To test this hypothesis in production conditions, some new methods were applied that confirmed the assumptions and contributed to the results justification. This way of corn rootworm control is mostly for small scale farmers, with a diverse production (mixed animal and field crop production), who have an interest of growing corn in a repeated seeding, whenever possible. On the *economic* side, it is important for farmers to be introduced to the economic effect of a certain production. Gross margin is a quick and efficient indicator for comparing different

production lines (enterprises) and choosing the most economic one (Tomić et al., 2013). Janković et al. (2007) showed that corn production gives the highest gross margin value per hectare of all field crops.

Materials and Methods

Gross margin calculation

Gross margin was used as an indicator of economic effects of maize grain production (Anđelić et al., 2010). Data for gross margin calculations were collected through the questionnaire from the representative farm in Pomoravlje region (village Končarevo) in 2012.

For calculating the basic elements of gross margin, following data were used: data on yield and price; by-product price; seed cost; quantity and value of fertilizers, pesticides, and fuel; and costs of contracted services. Indicators for the value of production, total variable costs and gross margin were calculated according to methodology provided by Agriculture Extension Service of Serbia website (www.psss.rs). *Microsoft Excel* was used for processing data and calculating the average gross margin for corn, soybean and wheat, elements of revenue and expenditures. The programme was adjusted to calculate the average value of each element of the calculation[5].

Risk assessment

There are only two methods to evaluate the suitability of a field for growing corn in continuation. The first method is based on a detailed check of 40 plants, on a weekly basis. One check consists of careful examination of two plants, which means that one should take 20 evenly dispersed samples from a single filed. A samples order in a field should be in an inverted 'U' shape. Every plant should be up to 3 m apart from another (Edwards et al., 1994). To get rid of the edge effect, the first sample should be taken from a distance of at least 25 rows away from the edge of the corn field. Beside the average number of adults, this method of confirming the economic damage threshold also takes into consideration the plant structure, frequency of growing corn, physical characteristics of the soil and the sex ratio in the pest on the particular plot. Based on these elements, tables with critical numbers are formed. Another method rationalizes the sampling process in terms of labour and time. It is primarily based on distinct differences in the density of Western corn rootworm populations in fields, and in the beginning of the assessment, it quickly discards plots with high abundance but, if abundance is low, the process stops until the next inspection.

Determining the number of populations of western corn rootworm was conducted on corn plots in Končarevo village, where the FFS – Farmer Field School was organized. Work with the farmers was organized in line with the principle of non-formal adult education (NFE) and they were trained how to determine the population size of western corn rootworm using a variety of methods, primarily the Agro Ecological System Analysis (AESA).

5 www.itecherpsolution.rs/bm/doc/bmuputstvopsenicauproscena.pdf , www.itecherpsolution.rs/bm/doc/bmobrazacpsenicauproscena.xls

Method of Non-Formal Adult Education

When working with farmers, we used methods of non-formal adult education (NFE) (Callo et al., 1999), and "Farmer Field School" (Gallagher, 1996; Pontius et al., 2002; Stanković, Sivčev 2004; Berg, 2004; Sivčev, Rahović, 2008), as well as the Agro Ecological System Analysis. As a developed and efficient method of counselling, non-formal education is a training method based on assumptions about the learning process of adults, who differ from children on their way of learning, because they have already had some experience, knowledge and skills, as well as their own beliefs, values, prejudices, preferences etc. Adults normally go through certain stages of the learning cycle. These stages are testing, analysing, processing and generalizing. This makes farmers a significant factor in the training process, so their active participation is very important and their training is conducted in phases (experiential learning, making analyses and generalization) that repeat cyclically (FAO, 2004). The "Farmer Field School" model links farmers, who are equal partners in finding locally adapted cropping practices and pest management. The costs of farmer field schools are small and correspond to the economic strength of these small-scale farmers. This model can be applied to all cases where knowledge and skills are required and human labour is necessary, regardless plot size, such as in organic production of strawberries and raspberries, or glasshouse vegetable production. It is also applicable in production of field crops grown on large areas and giving relatively low yields, like corn, which cannot be burden with new costs because this production would not be cost-effective.

Agro Ecological System Analysis (AESA)

The Agro Ecological System Analysis involves careful consideration of all available techniques (ways) of pest control (suppressing), and their later integration in the production, reducing pest development in order to control the use of pesticides at an economically justified level, which would lead to reducing risks to human health and the environment. The integrated pest management (IPM) emphasizes and points out the cultivation of a healthy crop with minimum disruption of the agro ecological system, encouraging and spreading mechanisms of natural pest control (FAO, 2004). The most important cropping measures in integrated pest management are: Crop rotation, Choice of varieties and hybrids, Tillage, Spatial isolation, Irrigation, Sowing, planting, Weed control, Harvest, picking and collecting products.

The main goal of sustainable agriculture is the advancement of agricultural production in order to create higher profits while protecting the environment, people and animals.

Therefore IPM is based on four practical principles (FAO, 2004):

1. Grow healthy crops: grow varieties resistant to major pests and diseases, yet completely adapted to the local environment; proper implementation of cropping practices (pruning, fertilization, and irrigation), necessary for healthy plants. A healthy, robust plant is a primary goal of the IPM method - it can resist diseases and compensate damages caused by insects, so that damage does not always have to lead to excessive yield losses.

2. Preserve natural enemies: in all agricultural ecosystems there are predators, parasites and diseases that attack pests in egg, larva, pupa and adult stages. These natural enemies are often found in the field and they are "friends of farmers" because they can biologically control pests. IPM training mainly focuses on how to identify and manage these natural enemies so that they would not be destroyed with excessive use of pesticides.
3. Regular field observation: it is necessary to assess the dynamics of crop pests and natural enemies, diseases, weeds and weather conditions. An IPM trained farmer typically does this during regular activities of crop care. Observations should determine the condition of a crop and whether there are some pests or diseases that could cause yield losses. It is important to remember that not all damages lead to yield losses.
4. Farmers become experts: the emphasis is on improving the ability of farmers to make better decisions, increase their efficiency and manage their farms better. The future of production and food security depends on how farmers innovate and manage the system. The success of IPM depends on farmers and therefore it put emphasis on their skills and knowledge.

The content of the AESA training and programs for farmers include: field analysis, samples analysis, discussion and specific topics.

An example of the agenda and the content of activities of a "Farmer Field School" used in work with farmers from Končarevo, and the content of the Agro Ecological System Analysis, would look like this (Sivčev, Rahović, 2008):

- Observation of the experimental field: farmers in small groups monitor and record changes in their experiment throughout the season.
- Analysing the differences between different settings of the experiment.
- Discussing the effectiveness of different methods: making conclusions and giving recommendations for the further work.

Introducing sustainable methods of monitoring the occurrence and abundance of western corn rootworm

As has been mentioned, pheromone traps are the most accurate way to determine the maximum number of adult insects because they show the state of the population in a wider area, attracting insects from a distance greater than 100 m. Setting standards for our climate conditions makes it possible to organize a broad-based education / training for agricultural extension agents on the principles of non-formal education (NFE), and also directly or indirectly, training for a large number of primarily ''medium and small-scale farmers" (FFS) on visual assessment and determination of the abundance of harmful species. This ensures a massive and broad territorial coverage of corn fields, for monitoring and predicting the occurrence of Western corn rootworm in repeated sowing.

Effects of using Farmer Field Schools

Growing crops that increase the farm income is one of the ways to "add value (revenue) to the production" of an individual farm, as well as to strengthen the competitiveness of country's agriculture and foster rural development. When it comes to farmers as users of advisory services, they can be divided into two groups: 1) a small number of large-scale farmers, who can pay for advisory services, and 2) small-scale farmers, who will not be able to pay for these services in the foreseeable future.

The Agricultural Extension Service (PSSS) should be able to provide consulting services to specialized farms, which are commercial producers, as well as a large number of small farms, small households with a few acres of land. On these farms they are only members of the family who work, they have very little training on the organization and their production is generally mixed. In our country there is no effective method how to improve the production and quality of agricultural products of small-scale farmers. They are very numerous, having different products, production of which can hardly be characterized as commercial by the standards of the developed countries.

On the one hand, these farmers cannot pay for advisory services, and on the other hand, PSSS cannot assist them by visiting each household. Worldwide, it is of great importance for an extension service to work with farmer groups to achieve the efficiency. Experience in working with such farmers has shown that the results are positive when the significance and solution of a problem are determined from the standpoint of small-scale farmers, i.e. when the problem is solved in a sustainable manner. With this approach, the interests of small-scaled farmers are ensured who are then happy to engage in group work and achieve massive and quality production without any major problems.

This model can be applied to all cases when knowledge and skills are needed and human labour is necessary, regardless the size of the property. In a "Farmer Field School" (FFS), all the parties involved are equal partners in finding a locally adapted practice of crop and pest management. In a "Farmer Field School", farmers are not just passive recipients of some technical information, but they are given the opportunity to actively learn and therefore achieve better control over conditions they face in their fields every day. In this way, farmers can manage the ecological principles that should apply to their fields and become experts in integrated production and protection. Finally, collaboration and circulation of information among farmers gathered in FFS provide a far greater effect of environmental management of WCR than the application on individual fields.

Results and Discussion

This study proves that crop rotation is an efficient strategy for control of this pest in our conditions. In a crop rotation system, during the first year of growing corn, there was a small population of this pest when sampling, and only in a few cases (1.17%) the pest was present in numbers close to the economic tolerance threshold. When the abundance was determined, it was usually on adjacent fields that were under repeated corn sowing. Although root damage was not the matter of investigation, some obvious symptoms of

damage, such as plant lodging, were not registered in the first year. Since most of these fields were characterized to be below the economic threshold of six adults (beetles) per trap per day, Serbian corn producers could sow corn again with a relatively low risk for roots to be significantly damaged in the upcoming year. However, in the midst of Western corn rootworm occurrence most corn producers resorted to crop rotation. A similar situation happened in Central Europe. In experiments with crop rotation in Hungary, Kiss et al. (2005) observed the numbers of insects were lower in rotation when compared to the continuous corn sowing. Crop rotations of corn, soybean and sunflower were effective in minimizing the population of Western corn rootworm. It is possible that the diversity of vegetation played a role in the effectiveness of crop rotation. Moeser and Vidal (2004) showed that an expanded food selection present in South eastern Europe, had contributed to the successful invasion of pests in Europe, but it is also possible that it had happened due to reducing the selection pressure for pests to lay eggs out of corn. This suggests that crop rotation and the diversity of agricultural crops can significantly reduce the risk of high population abundance of Western corn rootworm.

In fields where corn is grown continuously (repeated sowing) population density of Western corn rootworm slowly increases with the number of years of repeated sowing. Thus, the mean number of pest populations in years 1-5 in repeated sowing increases from 1.17, 4.61, 6:41, and 10.30 to 13:53 adult per trap per day. In the case of continuous sowing, the presence of food is not considered to be a limiting factor for the increase in number of the population. In 2000, an unusually dry and warm summer resulted in a high mortality of eggs. Not fulfilling its potential fertility is probably the main reason why Western corn rootworm populations are not higher or they are even reduced. Similar conclusions can be drawn from the results of this study. The influence of unfavourable environmental conditions in 2000 was seen in corn fields in all areas, especially in Eastern Serbia, where it was very difficult to find damaged fields and fields with populations above the economic threshold in the next year (2001). Moreover, in 2003 the weather conditions were again extreme, with low precipitation and high temperatures, which also contributed to the reduction of pest populations. Another example of the impact of adverse weather conditions was registered in the spring of 2005, when the frequent and heavy precipitation was caused by excessive soil moisture and flooding. Due to these specific conditions, sowing was delayed, resulting in low population density in many corn fields.

The research by Wilson et al. (2005) showed that the majority (75.2 %) of farmers in five U.S. states in the Corn Belt use crop rotation to control Western corn rootworm. In our study, farmers used crop rotation as a traditional practice, not only for the management of Western corn rootworm, but also for weeds and diseases. However, based on corn fields analysed in our study, it does not seem that all the fields rotated on annual basis. The farmers in our study generally used corn rotating below the economic threshold.

Onstad et al. (2003) pointed out that in Eastern and Central Illinois in case of continuous corn sowing (2 - 9% on average) it takes 16 years until the pest become resistant to crop rotation. In Serbian agro ecological conditions, due to the occurrence of Western corn

rootworm and severe damages registered in the early stage, the share of corn that once was more than 30% has been reduced to about 0 %. Under the given conditions, the ratio of corn and non- corn fields was about 50:50, which means that farmers rotated crops annually (Sivčev, Galo, 2001). Crop rotation is used by many farmers because it is very efficient, and the total density of WCR population has been therefore significantly reduced.

In our sample, 87.8 % of the fields had no economically harmful population of WCR. As it can be expected, the share of fields with population density below the economic threshold decreases with increase in number of years of repeated corn sowing. The share of fields under corn production (1.2 million ha) in total arable land available (3.3 million ha - 36.4 %), indicating that the complete corn production can be protected by using crop rotation. It is clear that the selection pressure for WCR populations resistant to rotation is not high. Based on these data, it appears unlikely that WCR populations will develop resistance to rotation. Our data encourage the idea of crop rotation sustainability, previously pointed out by Miller et al. (2007). Moreover, what this data indicate is a generally low level of genetic differentiation between the variants and wild-type WCR populations. Currently, WCR is not an invasive pest species in Serbia, but it is considered as a well-established economically important pest, which can efficiently manage crop rotation (Sivčev et al., 2009; Stanković, 2012). Therefore, a need for effective and long-term control of WCR should primarily rely on encouraging the diversity of crops.

Gross Margins of Different Enterprises - Wheat Production

The size of an estate and the acreage of the used agricultural land are certainly not information on which we can evaluate the performance of a farm. Even when we have data on what is produced, we must know when and how much is produced. Based on these data, we can compare the performance of individual production lines and make decisions on the future structure of production. One of the derived indicators that can be used as a criterion for determining this structure is the gross margin. Of course, the gross margin is not the most important and the only criterion, but it can be a starting point that does not require numerous and complicated data and methods.

A gross margin of enterprises in one year can be represented by using the data for the same production line obtained from different farms. Gross profit margin does not indicate profits and it does not include the size, and value of fixed costs. It represents the total value of production subtracted by the direct costs of investments (purchased inputs).

In 2012, on one farm, wheat was sown on 5 ha. The average yield of mercantile wheat on that farm was 4.00 t/ha. With an average price of 25,000.00 RSD/t the value of the main commodity was 100.000,00 RSD/ha, which with the subsidy of 9,220.00 RSD/ha gave the total production value of 109,220.00 RSD/ha. The cost of inputs per unit was 49,710.00 RSD/ha on average.

The most important items in the direct (variable) costs were mineral fertilizer (51.30%), fuel (23.53%), seed (23.23%), and chemical products - pesticides (only 1.93%).

The realized gross margin was 59,510.00 RSD/ha, where:

Critical price was 12.43 RSD/kg and

Critical yield was 1,988.00 kg/ha.

After conducting the sensitivity analysis, and monitoring the variations in gross margins when the offering and selling price or both parameters range +/- 20%, it was noted that the gross margin could become negative only when yield and / or market price reduced for 50%.

Table 1. Gross margin for wheat production in Končarevo village

Enterprise: Renesansa wheat variety Unit of production: 1 ha		**Končarevo village**				
	Income	**Quantity**	**MU**	**Price**	**MU**	**Amount (RSD)**
1.	Wheat grain	4,000	*kg/ha*	25	*RSD/kg*	100,000.00
2.	Field crops subsidy	1	*RSD/ha*	6,420	*RSD/ha*	6,420.00
3.	Fuel subsidy	40	*RSD/ha*	70	*RSD/ha*	2,800.00
A.	**Total income**					**109,220.00**
Variable costs						
1.	Seed	350	*kg/ha*	33	*RSD/s.u.*	11,550.00
2.	**Fertilizer**					
	a) NPK	350	*kg/ha*	50	*RSD/kg*	17,500.00
	c) KAN	250	*kg/ha*	32	*RSD/kg*	8,000.00
3.	**Pesticide**					
	a) Monosan herbi	2	*l (kg)/ha*	480	*RSD/kg*	960.00
4.	**Diesel fuel**					
	Basic and additional tillage	30	*l/ha*	130	*RSD/l*	3,900.00
	Fertilizing	15	*l/ha*	130	*RSD/l*	1,950.00
	Sowing	15	*l/ha*	130	*RSD/l*	1,950.00
	Measures of care and protection	10	*l/ha*	130	*RSD/l*	1,300.00
	Transportation	10	*l/ha*	130	*RSD/l*	1,300.00
	Harvest	10	*l/ha*	130	*RSD/l*	1,300.00
5.	**Contracted services**					
	Sowing		*ha*		*RSD/ha*	-
	Harvest		*ha*		*RSD/ha*	-
	Labour		*ha*		*RSD/ha*	-
B.	**Total variable costs**					**49,710.00**
C.	**Gross margin (A – B)**					**59,510.00**

Source: Authors' calculation based on data from PSSS Jagodina questionnaire (2012).

Soybean Production

In 2012, soybeans were planted on 2.0 ha of a selected farm. The average yield of soybeans was 2.0 t/ha. With an average price of 65,000.00 RSD/t, the value of the main commodity was 130,000.00 RSD/ha, which with the subsidy of 12,000.00 RSD/ha, gave the total production value of 142,000.00 RSD/ha.

Total variable costs per unit, were 69,590.00 RSD/ha on average.

The most important items in the direct (variable) costs were fertilizer and pesticide (30.17%), fuel (15.89%) and seed (15.02%).

The realized gross margin was 72,410.00 RSD/ha, where:

Critical price was 34.80 RSD/kg and critical yield was 1,070.62 kg/ha.

Table 2. Gross margin for soybean production in Končarevo village

Enterprise: BALKAN soybean variety (Unit of production: 1 ha)			**Končarevo village**			
Income		**Quantity**	**MU**	**Price**	**MU**	**Amount (RSD)**
1.	Soy bean	2,000	*kg/ha*	65	*RSD/kg*	130,000.00
2.	Field crops subsidy	-	*RSD/ha*	-	*RSD/kg*	-
3.	Fuel subsidy	1	*RSD/ha*	12,000	*RSD/ha*	12,000.00
A.	**Total income**					**142,000.00**
Variable costs						
1.	Seed	110	*kg/ha*	95	*din/s.u.*	10,450.00
2.	**Fertilizer**					
	a) NPK	300	*kg/ha*	50	*RSD/kg*	15,000.00
	c) KAN	200	*kg/ha*	30	*RSD/kg*	6,000.00
3.	**Pesticide**					
	a) Afalon	2	*l (kg)/ha*	2130	*RSD/l (kg)*	4,260.00
	b) Dual	1,5	*l (kg)/ha*	2320	*RSD/l (kg)*	3,480.00
	c) Pulsar	1	*l (kg)/ha*	5150	*RSD/l (kg)*	5,150.00
	d) Ritam	1	*l (kg)/ha*	3200	*RSD/l (kg)*	3,200.00
4.	**Diesel fuel**					
	Basic and additional tillage	35	*l/ha*	130	*RSD/l*	4,550.00
	Fertilizing	10	*l/ha*	130	*RSD/l*	1,300.00
	Sowing	10	*l/ha*	130	*RSD/l*	1,300.00
	Measures of care and protection	15	*l/ha*	130	*RSD/l*	1,950.00
	Transportation	15	*l/ha*	130	*RSD/l*	1,950.00
	Harvest		*l/ha*	130	*RSD/l*	-
5.	**Contracted services**					
	Sowing		*ha*		*RSD/ha*	-
	Harvest	1	*ha*	11,000	*RSD/ha*	11,000.00
	Labour		*ha*		*RSD/ha*	-
B.	**Total variable costs**					**69,590.00**
C.	**Gross margin (A – B)**					**72,410.00**

Source: Authors' calculation based on data from PSSS Jagodina questionnaire (2012).

After completion of the sensitivity analysis, and monitoring variations in gross margins when offering and selling price, or both parameters in the range +/- 20 % , it was noted that gross margin could become negative only in the case of a reduction of yield and / or the market price, for about 50 %.

Corn Production

In 2012, corn was planted on 10 ha of a selected farm. The average grain yield was 5 t/ ha. With an average price of 26,000.00 RSD/t, the value of the main product is 130,000.00 RSD/ha, achieved with 6,420.00 RSD/ha subsidy, which gives a total production value of 136,420.00 RSD/ha.

Total variable costs per unit are 44,372.50 RSD/ha on average.

The most important items in the direct (variable) costs consist of: mineral fertilizer (52.06%), followed by fuel (26.95%), seed (11.72%) and, finally, protective equipment-pesticides (9.27%).

Table 3. Gross margin for corn production in Končarevo village

Enterprise: ZP 704 corn variety (Unit of production: 1 ha)			Končarevo village			
Income		Quantity	MU	Price	MU	Amount (RSD)
1.	Corn grain	5,000	*kg/ha*	26	*RSD/kg*	130,000.00
2.	Field crops subsidy	1	*RSD/ha*	6,420	*RSD/ha*	6,420.00
3.	Fuel subsidy		*RSD/ha*		*RSD/ha*	-
A.	**Total income**					**136,420.00**
Variable costs						
1.	Seed	2	*s.u./ha*	2,600	*RSD/s.u.*	5,200.00
2.	**Fertilizer**					
	a) NPK	270	*kg/ha*	50	*RSD/kg*	13,500.00
	b) UREA	200	*kg/ha*	48	*RSD/kg*	9,600.00
3.	**Pesticide**					
	a) Acetogal	2	*l (kg)/ha*	650	*RSD/kg*	1,300.00
	b) Tangenta	1.25	*l (kg)/ha*	1450	*RSD/kg*	1,812.50
	c) Cambio	1	*l (kg)/ha*	1000	*RSD/kg*	1,000.00
4.	**Diesel fuel**					
	Basic and additional tillage	35	*l/ha*	130	*RSD/l*	4,550.00
	Fertilizing	10	*l/ha*	130	*RSD/l*	1,300.00
	Sowing	10	*l/ha*	130	*RSD/l*	1,300.00
	Measures of care and protection	12	*l/ha*	130	*RSD/l*	1,560.00
	Transportation	10	*l/ha*	130	*RSD/l*	1,300.00
	Harvest	15	*l/ha*	130	*RSD/l*	1,950.00
5.	**Contracted services**					
	Sowing		*ha*		*RSD/ha*	-
	Harvest		*ha*		*RSD/ha*	-
	Labour		*ha*		*RSD/ha*	-
B.	**Total variable costs**					**44,372.50**
C.	**Gross margin (A – B)**					**92,047.50**

Source: Authors' calculation based on data from PSSS Jagodina questionnaire (2012).

The achieved gross margin is 92,047.50 RSD/ha, where:

Critical price was 8.87 RSD/kg and critical yield was 1,706 kg/ha.

After conducting the sensitivity analysis, and monitoring the variations in gross margins when the offering and selling price or both parameters range +/- 20%, it was noted that the gross margin could become negative only when yield and/or market price reduced for 65.8%.

Since we assumed that all enterprises are burden by the same fixed costs in one production cycle, the gross margin for 2012 presented the data for the three enterprises taken from a reputable, market-oriented farm. The highest average gross margin on the farm in 2012, was achieved with corn (92,047.50 RSD/ha), and soybeans (72,410.00 RSD/ha) and the lowest with wheat production (RSD 59,510.00/ha). In these three enterprises, there were no big differences in the value of the gross margins, ranging from 1:1.22 between wheat and soybeans; 1:1.55 between wheat and corn and 1:1.27 between soybeans and corn.

The largest direct investments for inputs were required by soybean production – 69,590.00 RSD/ha and the lowest by corn production 44,372.00 RSD/ha.

The value of production was highest in soybean (142,000.00 RSD), slightly higher than in corn (136,420.00 RSD), and significantly higher than in wheat production (109,220.00). Comparing the yields and costs per ton of product does not make difference because different types of production were observed. The data we used in the calculation of gross margins, we can use for giving recommendations, planning and determining the structure of crop production, based on investments that the obtained values require.

This clearly suggests that corn has the highest gross margin with the least investments. Due to good and timely used cultivation technology, the chosen farm managed to achieve the yields even in extremely hot/dry 2012, which certain farms cannot achieve in more favourable conditions. The crucial role in this truly homely business had:

1. The needs of the farm, in terms of having sufficient and good quality animal feed,
2. Crop rotation, to what great attention was paid, considering the high yields achieved on the farm every year, partially due to the three-field system instead of the two-field system with a monoculture,
3. Monitoring of market trends and investments in the production of industrial crops.

Also, comparing to results described by Tomić et al., (2013), gross margin for corn, calculated based on questionnaire carried out 2012 on a total of 69 chosen leader farms from the territory of 11 stations of the Agricultural Extension Service of Serbia, was higher at our leader farm (92,047.50 RSD compared to 64,257.00 RSD). Yield was higher at observed leader farm (5000 kg/ha) compared to Central Serbia average (4,572 kg/ha). The difference was primarily due to calculated subsidies, but the most important difference was lower costs, especially for fertilizers 23,100.00 RSD compared to 30,036.00 RSD as an average in Central Serbia.

Conclusion

The results of this research are supposed to demonstrate the efficiency and sustainability of environmental management in solving problems of corn protection. These conclusions can be reached only if they learn and discover through their production practices. It is therefore to be expected that the applied methodology with Farmers field schools might be a results.

Crop rotation as a tool for management and control of corn rootworm and in terms of various biodiversity is the only efficient and cost-effective measure, but only in circumstances where it is absolutely necessary.

The main objective of the activity is the training of advisors to develop and implement programs in solving problems that small scale farmers have in production. Training is provided through a theoretical overview of the methodology and demonstration program of activities on existing projects, and later using specific tools. This will begin the process of creating an environment for the promotion of agricultural production and the quality of agricultural products of small scale farmers using the methodology of working with groups and the intention to first highlight the interest of small scale farmers to get their problems solved.

Significant increase in the dissemination of knowledge in the field (in the villages). The basis for the implementation of these activities, group work with farmers (Farmer Field Schools - FFS) and the dissemination of knowledge on the principle of ‘’farmer to farmer”. If we calculate the average of 10 farmers trained by the group on an annual basis, the total number of trained farmers who are able to improve efficiency in agricultural production, as well as providing information to its neighbours, would be significant.

The effect will result in great savings in unnecessary application of chemicals and environmental pollution, but also unnecessary application of crop rotation, which is important in specialized corn producers.

Gross margin of three production lines at the participant’s farms in training programs, have shown that corn has the highest gross margin (with the least investment).

Due to good and timely used cultivation technology, the chosen farm managed to achieve the yields even in extremely hot/dry 2012, which certain farms cannot achieve in more favourable conditions.

Calculations of production of wheat, corn and soybean on farms involved in education program in 2012, have shown that corn has the highest gross margin (92,047.50 RSD/ha), followed by soybean (72,410.00 RSD/ha) and wheat (59,510.00 RSD/ha). Lower costs, especially for fertilizers and other unnecessary inputs lead to higher gross margins.

Traditional corn production in the village Koncarevo, at the farm of participants in the education program justifies the continuation of corn growing at the same field, with a mandatory risk assessment of repeated sowing. Gross margin calculated on leader and other farms within the regular activities of Agriculture Advisory Services is a powerful toll for assessing the efficiency of advisory work.

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BRUTO MARŽA KAO POKAZATELJ ZNAČAJA EDUKACIJE POLJOPRIVREDNIKA O PROCENI RIZIKA OD KUKURUZOVE ZLATICE U PONOVLJENOJ SETVI

Jasmina Filipović[6], Slađan Stanković[7], Slobodan Ceranić[8]

Sažetak

Kukuruzova zlatica (Diabrotica virgifera virgifera) je krajem 80-tih godina uneta na teritoriju Srbije i kao novo introdukovana štetna insekatska vrsta se brzo proširila po celoj teritoriji Srbije prouzrokujući štete. Tokom nekoliko godina praćenja pojave šteta primećeno je da plodored u našim uslovima pokazuje odlične rezultate. S druge strane, domaće životinje troše tokom uzgoja velike količine semena kukuruza, što sa obzirom na ograničen zemljišni fond obično znači učestalo gajenje kukuruza u ponovljenoj setvi ili u dugogodišnjoj monokulturi, a što povlači za sobom pojavu šteta od kukuruzove zlatice. Kroz škole u polju za poljoprivrednika (FFS), poljoprivrednici su edukovani o proceni rizika od kukuruzove zlatice pri ponovljenoj setvi kukuruza . Cilj je bio da se produži proizvodnju kukuruza u monokulturi, pod pretpostavkom veće profitabilnost proizvodnje kukuruza (bruto marža). Bruto marže tri linije proizvodnje na gazdinstvu ucesnika programa edukacije pokazale su da kukuruz ima najveću bruto maržu uz najmanja ulaganja (92,047.50 din/ha), zatim soja (72,410.00 din/ha), a najmanju pšenica (59,510.00 din/ha). Moglo bi se zaključiti da je najbolji interes farmera da gaje kukuru u monokulturi, kada je to moguće , uz obaveznu procenu rizika od ponovljene setve.

Ključne reči: *kukuruz, kukuruzova zlatica, proizvodnja, bruto marža, ulaganje, cena, edukacija.*

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COMPARATIVE ANALISYS OF AGRO-FOOD TRADE IN MONTENEGRO AND EU CANDIDATE COUNTRIES

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Summary

The aim of the paper was the analysis of the competitiveness and changes in the foreign trade of the Montenegro from 2006-2013. The main contribution of the work was supplemented by the comparison of the Montenegro agro-food trade performance with candidate and potential candidate EU countries. Taking into account the many differences among the analyzed countries we used an unconventional methodical practice based on the calculation of trade balance per one inhabitant. During the analyzed period, only 2 countries exceeded the level of 100% self-sufficiency and permanently reached the positive trade balance with agricultural and food products. As to the "self-sufficiency level" calculated on the basis of the average trade balance per one inhabitant in 2006–2013 within the candidate and potential candidate EU countries the last position belongs to the Montenegro closely before Albania and Bosnia and Herzegovina.

Key words: *agro-food trade, foreign trade, efficiency, competitiveness.*

JEL: *F10, Q18*

Introduction

The Montenegro is a small and open economy. Montenegro's economy was slowly transitioning to a market system. Unemployment and disparities in regional development, especially in the north, remain key political and economic problems. In the Montenegro,

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the past decade was characterized by the reduction and concentration of the food industry and the retail network. The neglect of agriculture had a negative impact on the growth of GDP, employment, the external current account deficit and initiated the migration from rural to urban areas of the country (Fabris, Pejović, 2012). However, one of the structural characteristics of Montenegrin food production is a higher share of primary agriculture in gross domestic product than of food-processing sector. The 2006 dissolution of the loose political union between Serbia and Montenegro led to separate memberships in several international financial institutions such as the EBRD, World Bank, IMF and WTO. The European Council (EC) granted candidate country status to Montenegro at the December 2010 session. Montenegro began negotiations to join the EC in June, 2012. Transition to a market economy, trade liberalization, free trade agreements, regional European reintegration and rapid adjustments to EU membership might have induced substantial changes in the structures of agro-food trade flows and changes in comparative advantages. The agriculture has a special place in the process of free trade given the usually limited effects in the liberalization of agricultural products (Ćejvanović et al, 2014). Since the very beginning of the integration, agriculture in the European Union has been one of the most important sectors (Antevski et al., 2012). Transformation of national agri-food trade was one of the major changes indicated by several authors (Fertő, 2008; Baráth et al., 2010; Svatos, Smutka, 2011).However, research on comparative trade advantages for agro-food trade in CEBCs is still relatively rare (Bojnec, Ferto, 2009). This has motivated our research to investigate agro-food trade developments and trade advantages between Montenegro and candidate and potential candidate EU countries during the pre-enlargement period in order to derive broader policy implications for agro-food trade and sustainable agro-food sector development. Montenegro has close commercial relationships with various countries on different continents, but the main trade partners are the European countries. The main trade partners were EU-28 and CEFTA for export with share of 56% and for import of 38%. The main trade partner countries were Serbia, Italy, Greece, Slovenia, Hungary and Germany. Since 2006, the share of the EU countries in the total Montenegro s trade has constantly increased. According to relationship existing between Montenegro and the EU-27 the agro-food trade has been intensified. The main agro-food product groups from export and import point of view are: beverages, tobacco, meat and meat preparations, vegetables and fruit, cereal and cereal products and fish and preparations according to the statistical classification. In the period 2006-2013 all the agro-food product groups expect beverages and tobacco registered an important growth. Regarding to export of agro-food products, meat and meat preparations were on the top position followed by vegetables and fruit and cereal and cereal products. Regarding import, the highest value belonged to meat and meat preparations, followed on the second position by vegetable products and fruits, on the third position by cereal and cereal products, than beverage and tobacco and on the last one by fish and fish preparations (Jovanović, Despotović, 2014).

Material and methods

Data used in the contribution were derived from the Statistical Office of the Montenegro (MONSTAT) and the Statistical Office of the European Union (EUROSTAT). The adequate long time series (from 2006 to 2013) was selected in order to enhance the authenticity of the reached results. During the last half of the century, applied trade literature has developed three main concepts for measuring comparative advantages, trade specialization and trade competitiveness: relative comparative trade advantage measures, intra industry trade indices and categories of price and quality competition in two-way trade and non price competition in one-way trade (Bojnec and Ferto, 2012). There were variations and large differentials in the border barrier in bilateral trade flows between European Union (EU) countries (Minondo, 2007). Western Balkan countries are quite different, but they can be characterized by their shared goal, which is the quickest possible accession to the European Union (Mizik, 2014). So, we tried to evaluate the impact of the foreign agro-food trade on the consumption structure of inhabitants in the candidate and potential candidate EU countries - Turkey, Serbia, Republic of Macedonia, Bosnia and Herzegovina, Albania and Montenegro. There were no available data series for Iceland and Kosovo. In order to analyze the trends of the agro-food foreign trade, the specific indicators have been used by different authors such as the volume of export, import and balance, the share of agro-food export, import and balance in foreign trade, the value and structure of agro-food export FOB and also of agro-food import CIF by section and main chapters according to the Combined Nomenclature, CN, the export impact on GDP, the import coverage by export, export value per inhabitant, export/agricultural production value were also determined using the formulas (Anghelache, 1999) and (Popescu, 2010). At the same time a few methods and indicators were used for the international comparison of the foreign agro-food trade. Several methods frequently used in the analysis of foreign trade models are based upon the calculation of the trade comparative advantage indices (Rusali, 2012). The position of agro-food trade of a given country can be judged in different ways. One way is to analyze the indicator of competitiveness (Bielik, Qineti, 2010). We used in this paper the final consumer of agrarian and food products or the consumer with a very similar structure of the basic consumption basket. The calculation per 1 inhabitant is eligible for the international comparison (Matošková, Gálik, 2009). In terms of balance, using of the calculation of the total agro-food trade balance per 1 inhabitant seems to be optimal. The scientific notation of the mentioned calculations is presented as follows:

$$PSOMM = PSO/MMM \text{ X } 100$$

$$PM = PSOMM/PVP$$

Where: PSOMM = share of the agro food foreign trade balance per1 inhabitant, calculated per monthly minimal wage (in %); PSO = share of foreign trade balance calculated per 1 inhabitant (in €); MMM = minimal monthly wage (in €); PM = number of months; PVP = share of expenditures (on food stuffs, tobacco and alcohol) in the disposable income of an inhabitant (in %).

Results and discussion

Montenegro's foreign trade has recorded continuous changes in the analyzed period. Export decreased from 443 mill € in 2006 to 372 mill € in 2013, while the import growth up from 1467 mill. € in 2006 to 1.769 mill € in 2013. Therefore, import value was higher than export value. As a result, the trade balance was a negative one registering a higher deficit from 2006 to 2008 and then its figure was much lower. Thus, in 2013 the deficit of Montenegro's trade balance accounted for 1.396 mill € and being by 36.4 % higher than in 2006. Since 2006, the goods exchange regarding agro-food products has been more intensive. In the analyzed period, the average of the negative agro-food trade balance shared in the total trade was 22 %. The average value in the mentioned period of agro–food balance was 325.8mil € (MONSTAT). Consequently, the agro-food trade shared with 17.9% in the total trade balance in 2006 and with 16.1% in 2008. In 2009, the development was impacted by the world economic crisis. The total Montenegrin export decreased as much as by 2.2% per annum, the agro-food import increased by 2.4% (Table1). The economic crisis affected more strongly the total import its value was decreased from 2008 to 2013 by -5.9 %. At the same time the import of agricultural and food products increased by 1.1%. A higher decline rate of import as compared to export was proved at a markedly negative total trade balance at the level of -1.635 mill €. The opposite development was recorded by the agro-food commodities. It resulted in the trade balance deterioration – to the highest negative value of –379.4 mill € (2013) in the history of the Montenegro.

Table 1. Indicators of the total and foreign trade of the Montenegro (in mill €)

Indicators	2006	2007	2008	2009	2010	2011	2012	2013	Average 06-13
Total export	443	457	419	278	329	451	365	372	389.2
Total import	1,467	2,092	2,537	1,658	1,646	1,828	1,818	1,769	1,851
Total trade balance	-1,023	-1,635	-2,118	-1,381	-1,317	-1,377	-1,454	-1,396	-1,462
Agro-food export	36.6	37.2	41.0	40.3	44.9	50.5	53.2	53.4	12.75
Agro-food import	220.0	300.9	404.6	380.6	384.8	418.8	421.2	432.8	370.5
Agro-food balance	-183.4	-263.7	-363.6	-340.3	-339.9	-368.3	-368.0	-379.4	-325.8
Agro-food / total balance (%)	17.9	16.1	17.1	24.6	25.8	26.7	25.3	27.1	22.2
Agro- food trade value	256.6	338.1	445.6	420.9	429.7	469.3	474.4	486.2	415.1

Source: Authors calculations according to data from EUROSTAT.

Table 1a. Descriptive statistics analysis

Indicators	Row1	Row2	Row3	Row4	Row5	Row6	Row7	Row8
Mean	389.25	1851.875	-1462.625	44.6375	370.4625	-325.825	22.575	415.1
Standard Error	22.783727	116.78299	111.17986	2.451307	25.963016	24.06543	1.6538645	27.946901
Median	395.5	1793.5	-1388.5	42.95	394.7	-351.95	24.95	437.65
Standard Deviation	64.442111	330.31216	314.46414	6.9333433	73.434498	68.067314	4.6778353	79.045773
Sample Variance	4152.7857	109106.13	98887.696	48.07125	5392.6255	4633.1593	21.882143	6248.2343
Kurtosis	-0.6946283	2.2674736	2.9287839	-1.900847	1.7558615	2.1779641	-2.0194855	1.3681655
Skewness	-0.6312897	1.3836556	-1.2072567	0.252424	-1.5456074	1.6692276	-0.5821368	-1.4190582
Range	179	1070	1095	16.8	212.8	196	11	229.6
Minimum	278	1467	-2118	36.6	220	-379.4	16.1	256.6
Maximum	457	2537	-1023	53.4	432.8	-183.4	27.1	486.2
Sum	3114	14815	-11701	357.1	2963.7	-2606.6	180.6	3320.8
Count	8	8	8	8	8	8	8	8
Largest(1)	457	2537	-1023	53.4	432.8	-183.4	27.1	486.2
Smallest(1	278	1467	-2118	36.6	220	-379.4	16.1	256.6
Confidenc Level (95.0%)	53.874953	276.14788	262.8986	5.7964201	61.392777	56.905699	3.9107682	66.08392

Source: Calculations according to data from EUROSTAT, (Table 1).

Many authors used different methods and indicators for the evaluation of competitiveness of the foreign trade with its positives and negatives. But, main focus is on the consumer of agricultural and food products as the consumer with a very close structure of the basic consumption basket. In this connection, it is practice to use the calculation per one inhabitant for the international comparison and for the comparison of the agro-food foreign trade efficiency. The commodity foreign trade exchange is the bilateral trade relation (import and export of goods). So it seems to be optimal to use the calculation of the total agro-food trade balance per one inhabitant (Table 2).

Table 2. The share of the foreign trade balance calculated per 1 inhabitant (€)

States	2006	2007	2008	2009	2010	2011	2012	2013	Average 06-13
Turkey	62.3	54.3	43.9	60.0	67.0	56.91	70.9	77.8	61.6
Serbia	39.5	52.3	41.3	87.1	114.5	94.4	119.5	105.7	81.8
Republic of Macedonia	-7.0	-34.4	-223.4	-46.0	-31.2	-46.3	-67.1	-45.5	-62.6
Bosnia and Herzegovina	-0.2	-0.2	-269.4	-0.2	-0.2	-272.0	-272.5	-263.1	-134.7
Albania	-121.0	-143.7	-168.9	-161.5	-181.7	-186.1	-186.7	-184.4	-166.8
Montenegro	-294.1	-421.9	-579.4	-540.0	-549.9	-594.1	-593.2	-611.0	-522.9

Source: Authors calculations according to data from EUROSTAT.

According to calculation in table 1 it is possible to analyze the degree of self-sufficiency of the individual countries on the assumption that the inhabitants basic living needs. During the analyzed period, only 2 countries exceeded the level of 100% self-sufficiency and permanently reached the positive trade balance with agricultural and food products. In the

long term, the privileged position belongs to the Serbia that registered the "surplus" of products (approximately 81.8 € per inhabitant). The full self-sufficiency degree is exceeded very significantly also in the sectors of Turkey. As to the "self-sufficiency level" calculated on the basis of the average trade balance per one inhabitant in 2006–2013 within the candidate and potential candidate EU countries the last position belongs to the Montenegro closely before Albania and Bosnia and Herzegovina. The share of the trade balance per one inhabitant is very important for estimation of its impact on the structure of the inhabitants' consumption. But, it is not possible to do it directly and exactly. The main reason is because the data on the foreign trade indicate only the value of the traded goods. It means they do not reflect the level of consumer prices. In this connection the data on the agro-food foreign trade balance per one inhabitant are taken as a value. At the same time, the different income level of the population in the individual candidate and potential candidate EU countries must be taken into account. The level of the minimal monthly wage was used in the calculations because its impact on the level of living standard in the analyzed countries. To simplify the average expenditures on food, tobacco and alcohol accounts to 15% of the disposable income in developed countries. In the Montenegro, the share of food expenditures accounts from 30 to 42% from the disposable income. The similar share was also used for other candidate and potential candidate EU countries. The agro-food sector and trade of the Serbia and Turkey is able to generate surplus every year or surplus equivalent to the level of the expenditures on food, tobacco and alcohol of an inhabitant whose income reached the minimal wage level for 1.4 and 1.3 months (Table 3).

Table 3. The share of the foreign trade balance in the EU per inhabitant, calculated per minimal monthly wage (in %)

States	2006	2007	2008	2009	2010	2011	2012	2013	No. of months
Serbia	753.2	768.4	1172.0	642.7	410.4	488.1	432.3	480.6	1.4
Turkey	672.3	749.5	1098.7	0	751.6	1008.5	754.1	0	1.3
Montenegro	-72.4	-58.2	-58.3	-77.0	-84.1	-80.6	-81.5	-79.6	-0.2
Albania	-180.9	-162.0	-161.6	0	-170.5	-173.0	-178.2	-195.1	-0.5
Bosnia and Herzegovina	-126.7	-127.8	-122.4	0	-167.9	-149.6	-153.0	0	-1.4
Republic of Macedonia	-293.0	-642.0	-106.5	-569.1	-1042.5	-720.2	-504.5	-745.9	-3.2

Source: Authors calculations according to data from EUROSTAT.
Note: The number of months calculated from the average value of 2006–2013.

It means the demand for food of their population (with the minimal income) for one year and four month can be covered is able to cover by the domestic resources generated within one year in the Serbia. In spite of the different living standard and the structure of expenditures, the agro-food sector covers the food demand of its population with minimal income from domestic resources for one year and four months in Serbia and for one year and three months in Turkey. The Montenegrin agro-food sector and trade is not able to cover the domestic demand. It means that with the view to mitigate his/her basic living needs an inhabitant of the Montenegro (whose income is at the minimal

wage level) must consume the imported foodstuffs approximately for 0.2 months within one year. An extreme case is Republic of Macedonia and Bosnia and Herzegovina, where the annual deficit of the foreign trade is equivalent to the level of expenditures on food, tobacco and alcohol of an inhabitant, whose income reached the minimal wage level for 3.2 and 1.4 months.

Conclusions

Since 2006, Montenegrin producers and exporters have been adapting to the changed conditions and they have been switched to trading in the EU and especially CEFT-a market. The WTO commitment concerning the elimination of all forms of export subsidies evoked the tendency to reduce the surplus of the commodities depending on export subsidies. The negative trade balance of the trade has been permanently deepened in Montenegro. The negative trade development culminated in 2008 when the highest negative trade balance of € –2.118 million was recorded within the Montenegro history. The year 2009 was affected by the world economic crisis. The crisis resulted in the growth of the share of the foreign trade balance in the Serbia and Turkey per 1 inhabitant and the decrease of real incomes and the purchasing power of households and consequently to the demand decrease in other candidate and potential candidate countries. In 2009 as compared to the previous year, there were imported to Montenegro less agro food products than in 2008. At the same time, in the 2009 is exported less than in previous period. But, during the analyzed period the crisis was provided better position for domestic food exporter. They recorded the growth of the export. During the analyzed period, only 2 countries exceeded the level of 100% self-sufficiency and permanently reached the positive trade balance with agricultural and food products. In the long term, the privileged position belongs to the Serbia that registered the "surplus" of products (approximately 81.8 € per inhabitant). In spite of the different living standard and the structure of expenditures, the agro-food sector covers the food demand of its population with minimal income from domestic resources for one year and four months in Serbia and for one year and three months in Turkey.

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Review Article

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MARKET PARTICIPATION DECISION OF SMALLHOLDER FARMERS AND ITS DETERMINANTS IN BANGLADESH

Ataul Gani Osmani[1], Elias Hossain[2]

Summary

This paper explores the market participation decision of smallholder farmers in Bangladesh and tries to sort out the most important factors that influence smallholder farmers' decision to participate in the output market to sell their produce in Bangladesh. To examine the relationship between the smallholder farmers' decision to participate in the market and the factors that affect these farmers' decision, a Probit regression model is employed. For this purpose this study uses primary data collected from 100 smallholder farmers of Durgapur Upazila under Rajshahi District. Main findings of this study indicate that there is moderate level of market participation by the households who decide to participate in the market with 57% sales of their produced crops. It is found that farm size, household labour, income from livestock and farm income might be the main factors that affect the smallholder farmers' decision to participate in the output market. These findings also suggest that the smallholder farmers would participate more and more in the output market, if farm size, household labour and farm income are increased in one hand and income from livestock is decreased on the other hand. The originality of this paper is that it examines the phenomenon of smallholder farmers' commercialization in Bangladesh from the perspectives of market participation, which may create an opportunity for further constructive debate. Finally, development market infrastructure, provision of marketing incentives to smallholder farmers and development of an institutionalized marketing information service are recommended to enhance commercialization of agriculture in Bangladesh.

Key words: *Bangladesh, agricultural commercialization, market participation, Probit regression, marketing incentives.*

JEL: *Q16, M24*

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Introduction

Agriculture continues to be a strategic sector in the development of most low-income nations like Bangladesh where smallholder farming is the dominant livelihood activity (SFB, 2015). This sector contributes around 16.77% to the gross domestic product (BBS, 2013) and provides employment for about 47.3% of the total labour force of the country (BBS, 2010). In the financial year (2013-14) until July-February, Bangladesh earned US$ 899.0 million by exporting agricultural products which was 4.53% of total export earnings of the country (GoB, 2014). In Bangladesh, smallholder farming accounts for 96% of its total operational holdings with a share of 69% of total cultivated area (Thapa, Gaiha, 2011). As most of the farmers in the country are marginal and small farmers, strong agricultural growth in the country may be achieved through the performance of smallholder farming.

Commercialization of agriculture means greater market orientation of goods produced by the farmers (Pingali, 1997). Agricultural commercialization usually takes a long transformation process from subsistence to semi-commercial and then to a fully commercialized agriculture with the main objective of achieving food self-sufficiency (Pingali, Rosegrant, 1995). Although agriculture in Bangladesh has contributed to increasing food self-sufficiency over the last 30 years, the participation in the commercialization process has been a difficult task for the smallholder farmers because of inappropriate policies, insufficient access to technology, institutional obstacles, weak infrastructure and unfortunate links to markets (Sharma et al., 2012). The self-sufficiency in food is continuously threatened in Bangladesh by an increasing population and stagnating agricultural yields (World Bank, 2015). The stagnation of agricultural productivity in Bangladesh occurs in many cases due to absence of commercialization of agriculture. As the productivity of farmers in Bangladesh is low, they cannot have surplus products and fail to participate in market. The terms upon which the smallholders enter and participate in output markets are sometimes inequitable. Many of the smallholder farmers in Bangladesh are currently passive participants, often obliged to sell low (immediately after harvest) and buy high, with little choice of where they conduct transactions, with whom, and at what price (IFAD, 2001). The asymmetric structure of many markets, high transactions cost and the lack of skills, information and organization may represent these substantial barriers to accessing small farmers into markets. Moreover, remoteness, scarce and poorly maintained roads, inadequate transport and storage facilities, and difficulties in accessing reliable information on products and prices prevent the smallholder farmers from participating in competitive markets, often restricting them to non-contestable markets dominated by a few, powerful purchasers (World Bank, 2007).

In the World Development Report 2008, it was argued that improving productivity, profitability and sustainability of smallholder farming is the main pathway to reduce poverty in the developing countries (World Bank, 2007). With the introduction of modern technologies and provision of various supports from the government authorities, agricultural production system in many developing countries is turning to be a commercialized one. In Bangladesh also agricultural production system has gradually been transforming from subsistence farming to commercial agriculture (Razzaque, Hossain, 2007; GoB, 2008). In recent years, smallholder farmers in Bangladesh are also taking part in market to sell some portion of their products.

Thus, smallholder farming has an important role in transforming Bangladesh agriculture from subsistence to market oriented production or commercial agricultural production. Now, it is observed that commercialization of agriculture can be achieved by promotion of value addition to high valued agricultural commodities, particularly horticultural and dairy products which supports agri-businesses and links farmers with markets (World Bank, 2007). For this purpose, National Agricultural Technology Project (NATP) of Bangladesh financed by the World Bank and International Fund for Agriculture Development (IFAD) integrates small and marginal farmers in Bangladesh recently who produce rice, maize, fruits, vegetables, livestock, fisheries etc. into value chains. Thus, the smallholder farmers are now producing more products to meet the domestic demand and export some portion of their products in other countries in the world (MoA, 2013). Moreover, Integrating Smallholder into Expanding Markets (ISEM) project, 2011-2012, in Bangladesh facilitates poor rural households to participate in high value agriculture market systems effectively and to move from subsistence to small-scale commercial farming.

Unfortunately, not much research has been conducted to verify the major factors responsible for dismal market participation by farmers, especially those in developing economies such as Bangladesh. This work is an attempt to fill the research gap and contributes to the generation of evidence for policy makers to realize greater market participation of smallholder farmers in Bangladesh. It is also necessary to do this research in the context of Bangladesh where there is observed increase in the population and farmers in the face of widespread poverty. The broad objective of this research, therefore, is to provide empirical information on households' involvement in the output market and to determine the factors that affect the market participation decision of smallholder farmers in Bangladesh using statistical and econometric approaches. Thus, the study may generate new empirical information on the simultaneous interaction of household decisions of market participation and the most influencing factors of the market participation of smallholder farmers in Bangladesh.

Literature Review

There are a number of determinants of market participation of smallholder farmers and are broadly categorized as external and internal factors. The external ones are factors like population growth and demographic changes, technological change and introduction of new commodities, development of infrastructure and market institutions, development of non-farm sector and broader economy, rising labour opportunity costs, and macroeconomic, trade and sectoral policies affecting prices and other driving forces (von Braun et al., 1991; Pingali, Rosegrant, 1995). In addition, development of input and output markets, institutions like property rights and land tenure, market regulations, cultural and social factors affecting consumption preferences, production and market opportunities and constraints, agro-climatic conditions, and production and market related risks are other external factors that could affect the commercialization process (Pender et al., 2006). On the other hand, factors like smallholder resource endowments including land and other natural capital, labour, physical capital, human capital etc. are household specific and considered internal determinants of market participation.

Household asset holdings, both in terms of capital and as a buffer to mitigate any production and market related shocks, are relevant in a smallholder commercialization process. Assets like land, oxen, farm implements, and human capital are essential for marketable surplus production at a smallholder level. Larger farm holdings enable households to exercise economies of scale by adopting modern technologies (von Braun, Immink, 1994). These and other assets for surplus production become critical, especially when markets for land and oxen power are completely missing or less functional. When factor markets are imperfect, resource ownership matters for efficiency (Sadoulet, de Janvry, 1995). In addition, household asset holding in the form of human capital is one of the crucial elements in commercializing smallholder agriculture. Human capital comprises education, experience, skills, capabilities etc. of the household members engaged in pursuing new opportunities that could change the household's overall living standards (World Bank, 2007).

Farm household's decision to participate in the market can be affected by different factors in the context of different developing countries. The scale of commercialization in one enterprise enhanced commercialization in the other and household's scale of commercialization in the two enterprises was determined by common factors. For example, the crop and livestock commercialization status are independent and the determinants are different (Goshu et al., 2012). The decision of smallholders to enter markets is influenced by many household (micro) and macro level factors (Gebreselassie, Ludi, 2008). Macro-economic and trade policies, market reform, rural infrastructure improvement and the development of legal and contractual environments in which smallholders and processors may operate are among the major driving forces of increased agricultural commercialization (Gebreselassie, Sharp, 2008).

Thus, the important determinants of commercialization are land size, gender of household head, livestock assets, ethnicity, education and location (Rahut et al., 2010). The result of empirical study of Gebremedhin and Jaleta (2010a) showed that commercial transformation of subsistence agriculture depends on both the determinants of market orientation and the determinants of market participation in crop output market, but market orientation can strongly be transformed into market participation. The intervention to enhance market orientation can be helpful in promoting market participation and the interventions to uphold market participation may not be sufficient to uphold market orientation. In addition, the distance to the nearest market and the availability of market information are found to be significant factors in households' degree of commercialization (Eskola, 2005). According to Egbetokun and Omonona (2012) the major determining factors influencing farmer's participation in the market are age, marital status, source of labour, farming experience, farm size. The probability of participating in output markets depends on household size, distant to the nearest marketing channel, price of the commodity and sex of the farmer (Onoja et al., 2012). The econometric analysis of Pender and Alemu, (2007) shows that increasing production of food crops is the most important factor contributing to increased sales and that increased smallholder access to roads, land, livestock, farm equipment, and traders are key to enabling increased smallholder production and commercialization of these crops. Moreover, Ele et al. (2013) finds that total quantity of food crops produced,

farming experience, access to agricultural extension service, size of land used for cultivation, membership in cooperatives and household family size are important factors determining the level of commercialization of smallholder farms. Therefore, analysis of the factors affecting market participation decision of smallholder farmers will help to design appropriate policy instruments, institutions and other interventions for their sustainable economic development. The degree of market participation of smallholder farmers depends on many factors including age of household heads, household size, food security, access to fertilizers and benefits derived from participation in farmer organizations (Chirwa, Matita, 2012). Similarly, both the total value of farm production and the proportion of land allocated to the major cash crop had a positive and significant impact on a household's degree of market participation, measured in terms of gross income from crop sales (Gebreselassie, Sharp 2008).

Study Area and Sample Selection

The present study is mainly based on primary data collected from the smallholder farmers of six villages from three unions of Durgapur *Upazila* under Rajshahi district. The total population of the district is 2,262,483 of which 51.20% are male and 48.80% are female. The main occupation of the people of the district is agriculture. About 59.4% people of Rajshahi district involve with agriculture followed by commerce 14.3%, service 8.9%, transport and communication 4.4%, non-agricultural labour 3.4%, construction 1.5% etc (BBS, 2011). *Durgapur Upazila* of Rajshahi district is an agriculture dependent area. The total area of the *Upazila* is 195.03 sq km. with total population of 2,595,197 of which 1,309,890 are male and 1,285,307 are female (BBS, 2011). From this *Upazila*, the sample farmers are chosen randomly using multistage random sampling method. For analyzing the market participation decision of smallholder farmers and its determinants, the sample has been selected in such a way that it covers all necessary data required for analysis. For conducting present study, we selected the study area with great care so that the estimated results become are representative. The rationale behind selecting Rajshahi for the present study is that Rajshahi district is an agriculture-based area. Rice is the dominant crop produced simultaneously with other minor crops such as wheat, potato, vegetables, jute, maize, oilseeds, pulse, onion, garlic etc. in the district. Farming is the principle occupation of most of the population and their livelihood mostly dependent on agricultural activities. In this area, farming is characterized by low level of production technology and small size of land holding. Production is primarily subsistence with little surplus for marketing. Around 80% people of study villages are farmer. In Rajshahi district there is sufficient scope to improve crop production using the improved technologies. For above-mentioned reasons the researcher has chosen Rajshahi district for conducting the research.

Since the researcher is constraint by time and other resources one *Upazila- Durgapur* was selected purposively for this study. From this *Upazila*, three *unions* are chosen randomly, taking two villages from each. There are 1 *Pourosova*, 7 *unions* and 124 *villages* in *Durgapur Upazila*. Firstly, the researcher selected three *unions* randomly.

The selected unions are *Noapara, Deluabari*, and *Jhaluka*. In the next stage, two *villages* from each *union* are selected randomly. The selected villages are *Nondigram* and *Kashipur* from *Noapara union*, *Vobanipur* and *Bera* from *Deluabari union* and, *Coupukoria* and *Shaheber* from *Jhaluka union*. Next, and then the researcher selected 100 respondents from the three sample *Unions* using the systematic random sampling method. Finally, a list of all smallholder farmers is collected from the agriculture extension office of *Durgapur* and then sample households are chosen randomly from these six *villages*. A total of 100 farm households are selected for this study. The total sampling information is presented in the following Table.

Table 1. Selection of the Respondents

Name of Union		Name of Village	Number of Sample
Noapara		Nondigram	17
		Kashipur	16
Deluabari		Vobanipur	20
		Bera	15
Jhaluka		Coupukoria	16
		Shaheber	16
Total	**3**	**6**	**100**

Source: Authors' calculations according to data from Osmani, Hossain (2013)

Model for Market Participation Decision

Most of the farmers in Bangladesh are marginal and small farmers and they have limited participation in the output market. Some farmers are subsistence farmers and cannot participate in the market to sell their product. However, recently farmers are adopting modern technologies and their productivity has increased. Thus, this facilitates them to participate in the market through selling their surplus products. A smallholder farmer's decision to take part in market is influenced by many socio-economic and farm specific characteristics (Gebreselassie, Sharp, 2008; Gebreselassie, Ludi, 2008; Gebremedhin, Jaleta, 2010b). As per the study of Egbetokun and Omonona (2012), a Probit model is used in this study to identify such factors. The relationship between market participation decision and the factors that affect the decision can be formulated as follows:

$$Y_i = f(X_i, D_i) \quad \ldots\ldots (1)$$

Where,

Y_i = Market participation decision by a household
X_i = Continuous factors of market participation decision
D_i = Qualitative factors of market participation decision (dummy)

According to Gebreselassie and Ludi (2008), in this study the market participation decision is estimated as Y = 1 if the household participates in output markets and Y = 0 otherwise. Following von Braun, Immink (1994), we can compute household crop output market participation in annual crops as the proportion of the value of crop sales

to total value of crop production, which can be computed as follows:

$$\text{Market participation} = \frac{\text{Total value of crop sales}}{\text{Total value of crop production}}$$

Given the nature of market participation level, the farmers are said to be market participant if their proportion of value sold is more than 75% (Goletti, 2005; Ohen et al., 2013). Thus, the researcher defined the binary response variable as Y = 1 if the farmer's crop sales exceed a threshold or critical level of Y*(75%) and Y = 0 if $Y \leq Y^*$. Here, the proportion of crop sold (say, above 75%) out of the total production by the smallholder farmers in the production year used as the proxy of market participation during data collection period (Moyo, 2010).

Siziba et al. (2011) observed that off-farm income, ownership of farm equipment's, and number of livestock owned were highly significant asset variables. Socioeconomic characteristics such as age, education, farm size, ownership of some assets and output were observed to have positive effect on market participation of various agricultural commodities (Olwande, Mathenge, 2012; Omiti et al., 2009; Randela et al., 2008). Public assets variables have also been found to have positive relationship with market participation especially with respect to access to credit and insurance (Cadot et al., 2006; Stephens, Barrett, 2011) and input use and access to extension services (Alene et al., 2008). Moreover, Siziba et al. (2011) observed that extension training and participation in research have positive effects on market participation. Following these studies, age, sex, education, farm size, household labor, non-farm income earning activates, access to credit, market information, value of produced crops, income from livestock, and non-farm income are used in Probit model as independent variables. Thus, the specified Probit regression model for identifying the factors that affect market participation decision of households is formulated in the following way:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + u_i \quad \ldots\ldots (2)$$

Where,

Y_i refers to market participation decision by a household (Y=1, if farmers participate in the market and Y=0, otherwise); X_1, X_2, ….., X11 are explanatory variables that affect the market participation decision; β_0, ……,β_{11} are parameters to be estimated; and u_i is the stochastic disturbance term. The Probit regression model adds the condition of normally distributed variables that can be formulated as:

$$P(Y=1/X) = F(Ii) = \frac{1}{\sqrt{2\Pi}} \int_{-\alpha}^{I_i} e^{-z^2/2} dz \quad \ldots\ldots (3)$$

Where,

$I_i = \beta_0 + \beta_1 X_1 + \ldots\ldots\ldots + \beta_{11} X_{11}$ = utility index (latent variable); P (Y=1/ X) = the probability

of market participation; Z = the standard normal variable, and F = the standard normal CDF. Gujarati (2003) explains the behavior of a dichotomous dependent variable as we need to use a suitable CDF (cumulative distribution function). The CDF is a function, which can be used in the regression model where the dependent variable is dichotomous taking the values of 0 or 1. That is, CDF of a random variable X is simply the probability that is takes a value less than or equal to x_0, where x_o is some specified numerical value of X. The estimating model that emerges from the normal CDF is popularly known as the Probit model, although sometimes it is also known as the normit model. In the selection equation (2), that is, the Probit model, the dependent variable is a dichotomous variable 'participation decision in the output market (represented as 1 when a household participates in the market and 0 otherwise'). The independent variables that condition the participation of smallholder farmers as adapted from literature are sex of household head, age of household head, level of education, farm size, household labor, non-farm activities, use of credit, market information, income from livestock, non-farm income, farm income. These explanatory variables are specified in Table 2 with their expected sign are assumed.

Table 2. Definition of Hypothesized Effects of Explanatory Variables on Market Participation

Variable Name	Variable Type	Variable definition and measurement	Hypothesized Effect on Market Participation
Sex of Farmer	Dummy	1 if household head is male, otherwise 0	+
Age of Farmer	Continuous	Age of the household head (years)	-
Experience of Farmer	Continuous	No. years engaged in crop production (years)	+
Level of Education	Continuous	Formal education of the household head (years of schooling)	+
Farm Size	Continuous	Amount of land under cultivation of farm household (*Bigha*)	+
Household labor	Continuous	Number of active family members working on the family farm (aged 15–60yrs)	+
Non-farm Activities	Dummy	1 if participated and o otherwise	-
Use of Credit	Dummy	1 if took credit and o otherwise	+
Market Information	Dummy	1 if accessible of market information and o if not	+
Income from Livestock	Continuous	Total value of livestock sold in the production year (Tk)	-

Variable Name	Variable Type	Variable definition and measurement	Hypothesized Effect on Market Participation
Non-farm Income	Continuous	Total income earned from non-farm activities in the production year	-
Farm Income	Continuous	Total value of crops produced in the last production year (Tk)	+

Source: Authors' definitions

Results and Discussion

In this section, descriptive statistics of the variables and the estimation results of the Probit regression are presented. The results will facilitate to identify the factors that influence a smallholder farmer to participate in the output market to sell his produced crops.

Descriptive Statistics of the Variables

The collected data from 100 smallholder farmers are analyzed to portray the relevant demographic, social, economic and farm specific features of the farmers. We have found that these features of all farmers are not same and there are significant variations across farmers. The key features of the variables used in the present study are shown in Table 3. From the table it is found that average age of the household head is 44.08 years with maximum of 65 years and minimum of 25 years. The average level of education of farmers in the study area is 5.4 years of schooling with minimum of no education and maximum of 20 years of schooling. All farmers in the study area do not have same experience.

Table 3. A Brief Description of Collected Data

Socio-economic and Farm Characteristics	Minimum	Maximum	Mean	Stdv.
Age of farmer (years)	18	65	44.08	11.08
Education (years of schooling)	0.0	20	5.40	5.27
Experience of farmer (years)	4	55	25.73	11.61
Farm size (in *bigha*)	0.65	7	4.01	1.82
Household labor (person)	1	3	1.15	0.61
Income from livestock (tk.)	0.0	110,000	20,244	25,822.9
Non-farm income (tk.)	0.0	400,000	37,252	61,529.4
Farm income (tk.)	10,900	316,000	80,110	80,968.2

Source: Authors' calculations according to data from Osmani, Hossain (2013)

From the table it is found that the average experience of the sample farmers is 25.73 years, whereas the minimum experience is 4 years and maximum experience is 55 years. The farms of different sizes are found in the study area. From Table 3, it is observed that the average farm size of sample farmer is 4.01 *bigha* indicating that most of the farmers in the study area are smallholder. Smallholder farmers cultivate their land by both family labor and hired labor. However, number of active family labor varies across households. The average number of active household labor is found 1.15 per household with maximum of 3 persons and minimum of 1 person. From Table 3, it is also seen that average annual income from livestock asset is Tk.20,244 (Taka - currency of Bangladesh), average annual non-farm income is Tk. 37,252, and average annual farm income is Tk. 80,110.

Market Participation of Smallholder farmers

Analysis of household market participation indicates that the households in the study area are moderately market participators. A statistical summary of crop value produced and sold with market participation status of the sample households are shown in table 4. The statistical summary given in table 4 shows that a typical household head produced crops valued approximately Tk.104,110 ranging from Tk.10,900 to Tk.416,000. From sells dimension, a typical household head, on average, sold food crops worth Tk.71,185 ranging from selling nothing to Tk.321,000. The market participation for the typical household head is computed to be 0.57 which indicates that on average a typical household sells 57% of his total crop production ranging from selling o% to 95%. This indicates that the level of market participation in the study areas is neither very low nor very high.

Table 4. Market Participation of Smallholder Farmers (Crop Produced and Sold in Taka)

Variable	Sample	Min.	Max.	Mean	Std. Dev.
Total value of crop produced	100	10,900.00	416,000	104,110	80,968.24
Total value of crop sold	100	0.00	321,000	71,185	71,815.05
Market participation	100	0.00	0.95	0.57	0.26854

Source: Authors' calculations according to data from Osmani, Hossain (2013)

Regression Results of Market Participation Decision

In order to achieve the purpose of the study, several demographic and socioeconomic variables, which are believed to have an influence on the decision to participate in the market, are included in the Probit regression. The estimation results are presented in Table 5.

Table 5. Probit Analysis of Determinants of Decision of Market Participation by Smallholder Farmers

Variable	Coefficient	Std. Err.	Z-value	P>|z|
Sex	0.88	1.38	0.64	0.524
Age	-0.02	0.03	-0.61	0.543
Level of Education	-0.04	0.07	-0.52	0.604
Farm Size	0.70***	0.21	3.31	0.001

Variable	Coefficient	Std. Err.	Z-value	P>|z|
Household Labor	1.08***	0.50	2.17	0.030
Non-farm Activities	-0.55	0.60	-0.91	0.361
Use of Credit	-0.34	0.60	-0.57	0.567
Market information	-0.40	0.64	-0.63	0.531
Income from Livestock	-0.001***	0.01	-2.52	0.012
Non-farm Income	-0.0000061	0.0000084	-0.73	0.464
Farm Income	0.0000057*	0.0000032	1.76	0.078
Constant	-4.27	2.40	-1.78	0.074
Log likelihood = -21.072235; LR chi2 (11) = 80.03; Prob. > chi2 = 0.0000; Pseudo R2 = 0.6550				

Source: Authors' calculations according to data from Osmani, Hossain (2013)

Note: ***, ** and * indicates 1%, 5% and10% significance level

From Table 5, it can be observed that the likelihood ratio statistics as indicated by chi-square statistics are highly significant (P <0.0000), suggesting the model has a strong explanatory power. The Pseudo R2 is 0.6550, indicating the specification fits the data well the variables included in the model explain 65% of the variation in the decision of market participation of farmers. Table 4 also indicates that the estimated coefficients of the Probit regression revealed that the explanatory variables– 'farm size', 'household labour' and 'farm income' positively and significantly influence the farmers' decision to participate in the market with crop sales. On the other hand, 'income from livestock' has significant negative impact on the decision of the smallholder farmers to participate in the market.

The Probit estimation result in Table 5 reveals that the variable 'farm size' is statistically significant at 1% level and has positive influence on the decision for market participation of households. This means that as the farm size increases, the probability of decision for commercialization increases. This result is in line with Okezie et al. (2012), Goshu et al. (2012) and Gebreselassie and Sharp (2008). This could be due to the role of farm size in boosting total production level and thus sales of surplus produce. Moreover, farm households with large farm size could allocate their land partly for food crop production and partly for cash crop production giving them better position to participate in the output market. Martey et al. (2012) had opined that farm size influences the level of agricultural commercialization in a study in Ghana. This study corroborates their result.

The Probit results show that 'household labor' has a positive effect, at a significance level of 1%, on the decision of households to participate in the output market. The sign of the coefficient is positive and it means that if a farm family has more active labour, its probability to taking decision of participating in the output market increases. This result is consistent with Gebremedhin and Jaleta (2010b). Therefore, this seems reasonable since households with a large number of active household labors can reduce their cost of production and produce surplus to be market-oriented.

Econometric analysis reveals that 'farm income' is another important variable having significantly positive impact on the decision of smallholder farmers to participate in the output market. It is statistically significant at 10% level indicating that households with high level of production tend to participate in the output market than those with lower production level. This means that farmers' decision on market entry is significantly related to the amount of farm production. This is due to the fact that households with higher value of produced crop sell higher proportion of their produce and thus, increase the probability to participate in market. This finding is similar to the finding of Gebreselassie and Sharp (2008), as well as Gebremedhin and Jaleta (2010b).

Moreover, the coefficient of income from livestock is found to have a statistically significant at 1% level and it negative influence on the probability of households to participate in the output market. This means that as income from livestock of the farmer's increases, the probability of farmers' orientation towards commercialization in the study area reduces. Thus, farmers with high degree of participation in the livestock market may less efficient in enhancing their productivity, thus farmers have a less chance of achieving surplus production for sale.

Contrary to earlier expectations, the variable- sex, age, education level, participation in non-farm activities, use of credit, market information and non-farm income are found to have no significant impact on the decision of the farmers to towards commercialization. Moreover, the direction of influence of some are found opposite to our expectation. For example, education level is found to have unexpected negative sign. The possible explanation for this might be the fact that most of the young household heads are motivated towards other occupations than cultivation.

To facilitate interpretation of the estimation results presented in Table 5, the marginal effects of each variable on the predicted probability of households' market participation, evaluated at the means of the explanatory variables, are reported in Table 6. The marginal effects report of the Probit regression provides the probability that a farm household will participate in output markets. Table 6 provides the probability estimation for the likelihood of market participation of a farm household given the statistically significant variables: 'farm size', 'household labor', 'income from livestock', and 'farm income'.

The marginal effect report of the Probit regression in Table 6 indicates that there is a probability of 13% that a farmer participates in the output market if his farm size increases, at mean value, by one *bigha*. The marginal effect shows that there is a probability of approximately 20% that a smallholder participates in the output market if he manages to have a mean of one additional active household labour. Similarly, the probability that a smallholder farmer will participate in an output market as a result of a one taka increase, at mean value, in the farm income is given by 0.0001%. In other words, if the farm income of a farmer increases by Tk. 1000, at mean value, then the likelihood of participation in the market increases by 0.1%.

Table 6. Marginal Effects of the Explanatory Variables Used to Estimate Probit Regression

Variable	dy/dx	Std. Err.	Z	P>|z|	x-bar
Sex	0.092	0.07	0.64	0.524	0.98
Age	-0.003	0.01	-0.61	0.543	44.08
Level of Education	-0.007	0.01	-0.52	0.604	5.40
Farm Size	0.128***	0.05	3.31	0.001	4.07
Household Labor	0.198**	0.09	2.17	0.030	1.17
Non-farm Activities	-0.107	0.12	-0.91	0.361	0.58
Use of Credit	-0.061	0.10	-0.57	0.567	0.43
Market information	-0.080	0.14	-0.63	0.531	0.66
Income from Livestock	-0.000005***	0.0000024	-2.52	0.012	20239
Non-farm Income	-0.000001	0.0000014	-0.73	0.464	37252
Farm Income	0.000001*	0.0000007	1.76	0.078	10411
Observed Probability	0.3				
Predicted probability	0.1066888 (at x-bar)				
Log likelihood = -21.072235; Number of obs. = 100; LR chi2 (11) = 80.03; Prob.> chi2 = 0.0000; Pseudo R2 = 0.6550					

Source: Authors' calculations according to data from Osmani, Hossain (2013)

Finally, the marginal effect report of the Probit regression in Table 6 shows that if a farmers' income from livestock increases by one Taka, then there are 0.0005% likelihoods that he would not take part in the output market since the coefficient of this variable is negative.

Conclusion

Smallholder farmers in Bangladesh have potential to contribute to economic growth and development. Market participation of smallholder farming is getting priority in the developing world in general and Bangladesh in particular. Lack of full participation in markets prevents them from transiting into commercial farming and hence their low contribution to economic growth. They are constrained by a number of factors in marketing, making it difficult for them to commercialize; such institutional, technical and socio-economic factors include lack of information, poor infrastructure, inability to have contractual agreements, lack of transport, poor organizational support, low access to extension agents, low use of improved seed and low use of fertilizer with relatively small marketable surplus. Thus, majority of the farmers are still into subsistence farming as they will only go to market to sell the excess after consuming enough by the households.

The results of the present study demonstrate that households in the study area are characterized by a high productivity but with moderate degree of market participation. The average share sold by the smallholder farmers is found to be 57% of their total crop productions. Moreover, there are both positive and negative significant relationships in the Probit model inferred that farm size, household labour and farm income are positively and on the contrary, income from

livestock is inversely related to the market participation decision of smallholder farmers in the study area. Following the constraints and effective factors, the study recommends that efforts should be made at upgrading roads and support establishment of more points of sales in farming areas in order to lower transportation costs to promote market participation. It is also important to consider the non-homogeneity of smallholder farmers' in terms of education, location and availability of other assets and youths should be encouraged to participate in agricultural production to inject new blood into the current production system.

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Review Article

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EXTREME WEATHER AND CLIMATIC EVENTS ON AGRICULTURE AS A RISK OF SUSTAINABLE DEVELOPMENT

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Summary

The Republic of Serbia suffers severe consequences caused by extreme weather and climatic events. Impact of these events on agriculture is significant, especially having in mind the link of agriculture to the wider scope of implementation sustainable development concept.

This paper has as a main goal to promote a strategic approach to protect agriculture from these negative impacts. Using social science methodology, after analyses of numerous data source, authors in the paper shows the existing gap in this field. Hence, results confirmed that, the weakest link in the agriculture protection lies in inadequate level of coordination between stakeholders, and insufficient response capacities of local communities.

Recommendation is that Serbia should address needs for create action in a process of mitigation consequences caused with extreme weather and climatic events on through broad-based collaboration among all stakeholders. After that action local community will be able to improve its sustainable development performance.

Key words: *agriculture, sustainable development, extreme weather.*

JEL: *Q10, P28*

Introduction

Protecting the nations` agricultural infrastructure and food supply against different kind of security threat, is of a vital interest in the modern age. The global financial crises implicate for additional financial and economic stability, and so on food security because the global food system is very vulnerable. Agriculture is at present excellently placed to produce as

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much food as required at an affordable price. Despite all efforts in global community the hunger is still prevalent in the world due largely to the uneven distribution of prosperity and purchasing power.

World poverty was further exacerbated in 2008 by dramatic increases in the cost of basic staples. In the short period between January and April in 2008, the price of rice – a staple for fully 50 percent of the world's population –increased by 400 percent (Kiernan, 2009).

The consequences of global climate change; extreme weather and climatic events in global community, and so well in the Republic of Serbia (RS) could have a great impact on planned implementation of sustainable development. Economic consequences of extreme weather normally occur through losses in primary production inputs: human resources, physical capital, infrastructure, land endowments and productivity (Calzadilla et al., 2004). International Panel for Climate Change (IPCC) defines extreme weather event as `a rare event concerning its statistical distribution on a certain spot`. Later in another documents IPCC stated that `an extreme weather event is an event that is rare at a particular place and time of year` (IPCC, 2007).

In emergencies the situations are more severe because `small farmers are faced with numerous obstacles in accessing all the factors that are needed for the delivery of agricultural products that comply with market requirements` (Zakic et al., 2014)

Agriculture makes excessive use of certain resources that are becoming even scarcer: manure, water and energy. A significant element of the greenhouse gases that pose a threat to the climate stem from agriculture (Transforum, 2010). Agriculture is unavoidable part of sustainable developments strategy equally important for all three pillars: economy, ecology and social relations. Therefore agriculture faces a major sustainable challenge: developing more towards a more sustainable method of production that is accepted and valued by society.

The paper is based on a methodological study of problems related to two basic concepts: Sustainable development in local governments and its connection on emergencies that occur in them (extreme weather and climate events), and at the same time `how to mitigate expected impacts on agriculture which could be significantly affected.` Therefore there is a need for discussion how the Serbian government today will move forward to the implementation of accepted concept of sustainable development (National Strategy for Sustainable Development, 2009), as well to the implementation of integral disaster risk reduction approach following a policy path close to European Union and global policy in this area (National Strategy for Protection and Rescue in Emergency Situations, 2011). The questions posed hypothesis of this article is: Do policy makers in Serbia recognize adequately the negative impact of extreme weather and climate events on Serbian agriculture, and what actions they plan for better response on risks, because of significant importance of agriculture to the sustainable development of society, especially in the basic, local level? In Serbia is recorded a great disparities among different region and some facts addressed the dangerous of this gap could be more serious in the future.

This paper could be helpful for all interested parties in their future efforts to provide necessary conditions in improving the response to extreme weather and climate events in the RS, and enhance future connection between agriculture experts, academic society, and policy makers: an infinite range of possibilities on path of achieving sustainable agriculture in sustainable society.

Methodology

Authors use in the paper preparation methodology suitable for social sciences science: analysis of documents, historical approach and statistic. The official publications of the relevant authorities in Serbia and from the European Union, and broader international community were examined. Authors in this period investigated the available literature in the field of sustainable development, sustainable agriculture, and global climate change, natural disasters, and with it scientifically proved connection with extreme weather and climate events, emergency response, state of agriculture and in society in general. Literature was also searched from numerous libraries and trough different websites. The documents were also collected from electronic sources: Literature Resource Center like Go Gale Group EBSCOHost, Academic OneFile, e Library, and printing material (books, journals, official documents).

This research is conducted in the two different phase: first conducted from June 2011 since the end of 2012; and second in the first half of 2013. The characteristic methodology related to the first phase was implementation of the so-called `desk top research. `In the second phase multivariate analysis is conducted. The main data sources in this phase were data obtain from Statistical Office of the Republic of Serbia (Statistical Office of the Republic of Serbia, 2013). Authors in this phase analysed 165 Serbian municipalities, which were compared by 39 variables structured as follows: 7 geographic; 7 demographic; 9 economic; 8 social and 6 political variables. With the help of statistical computer software SPSS 11.5 it was possible to gain typology of municipalities in Serbia, which show their local capabilities for sustainable development and investments.

Based on the gained results conclusion remarks review actions that should be implemented in Serbia in order to strengthen the stakeholders' ability to prevent, prepare, respond to, and mitigate short and long term consequences to agriculture caused with extreme weather and climatic events.

Results and discussion: How extreme weather and climatic events impact on agriculture

Serbia's First (Initial) National Communication under the United Nation Framework Convention on Climate Change (UNFCC) adopted by the Government on 11 November 2010 represents the first overview in the field of climate change on the national level and envisions national measures to combat climate change (Ministry of Environmental and Spatial Planning, 2010). According to this document Serbia will be seriously affected by climate change. Climate changes have significant impact on agriculture in the area of crop

production, animal production, and fisheries. Climate change impacts not only primary production but also on food manufacturing and trade (FAO, 2008).

Extreme weather and climatic events can have serious impacts on the Serbian agriculture, for example: crop growth or management could result in substantial reduction in yield of quality (Radovic, 2014). This could be a consequence of a single event, for example late spring frost; severe drought or prolonged soil wetness; hail or something else. Warm or wet autumn could cause delay in some vegetable harvest (potato); autumn field work; increased disease in autumn cereals and etc. Warm winter increased risk of wet rots, and secondary growth in stores. In some vegetable like cabbage trips trapped inside storage continue to reproduce.

The need to address agriculture protection in emergencies is not specific to climate change. It renders the need of early emergency managements sector, which has to develop and ensure capacity to implement plans that require investment in trained human resources and in facilities. In 2009, the Law on emergencies - E/S (Law on Emergency Situations, 2009) in Serbia was passed, along with sub-laws and it was a start of new age in integral protection and safety system. The Law on E/S encompasses the guidelines and proposals of the United Nations International Strategy for Disaster Risk Reduction UN ISDR (UN/ISDR, 2005). In the Law on E/S of Serbia, extreme weather and climatic events are not clearly defined. They are just a part of numerous events. This law provides only descriptive definition, without actual climatic parameters and measures (Radović, Keković, 2012).

According to Andjelković, under climatic extremes researchers have to consider not only the extremes of the atmospheric events in narrow sense, but also the consequences of climatic processes. That includes the seasons of their occurrence and extremes of the parameters of climatic elements. He further proposed a precise classification of extreme climatic events, like climate extremes or climatic events (Andjelkovic, 2010).

Contamination of agricultural and pasture land soil with different contaminants have been associated with climate change related extreme weather events, particularly with the increased frequency in inland floods. Agriculture was seriously affected in numerous floods in Serbia. In 2005 the village of Jasa Tomic was flooded and 120 wagons of seed wheat reserve in the village have also been destroyed. Agricultural machinery was trapped under the mud, and more than 3000 cattle have perished (United Nations Office for the Coordination of Humanitarian Affairs - OCHA, 2005).

The data review in Serbia during the period 2011-2012 was disturbing. In this period were recorded 24 emergency situations caused by extreme temperature. Those events caused 24 deaths and affected 88,234 people. Hydro-meteorological events (flood) caused death of two people and affected 4,900 people. The drought in 2012 caused enormous damage to almost all crops yield. When agriculture is not faced with drought, it is jeopardize with floods, hail, and etc.

Hence, extreme events happen in almost every part of the country, but the most vulnerable is rural area. It is possible that these events could trigger structural damage throughout the country, with influences in Serbian on productivity, trade and capital flows. Therefore the

broader context in mitigation of negative impacts of these events is urgently needed, having in mind the history of this events, still not so well developed emergency management services, and weak economic strength. Crop insurance in Serbia is still not adequately implemented and recognized. In Serbia the most recognized is crop insurance which includes following risks: hail, fire, and thunder. Storm, flooding and frost risks and insurance against loss of seed quality, loss of quantity and quality of fruit and table grapes and etc. starts to be more recognized recently (Čolović, Mrvić Petrović, 2014). In the Reports of the National bank of Serbia responsible for control in the insurance sector, there is no accurate data about payment for risks caused by drought or different consequences of extreme events (Radović et al., 2013).

Agriculture and the related food processing industry have great significance in the socio-economic development of the Republic of Serbia. Agriculture plays a significant part in the overall foreign trade, with 21% share in total exports and 6% to 8% share in imports (Radović, 2012). Hence, despite catastrophic floods in Serbia, agriculture recorded largest share in Serbia's exports for the nine months of 2014. Vegetable and fruit share were 551.6 million USD and cereals and cereal product were 526.5 million of USD (Chamber of Commerce and industry of Serbia, 2014). Although positive results some experts stated that `Serbian agriculture has a relatively poor performance through the decades,` and recognize that `one of the main factor is inadequate financing system for such purposes in spite of number financial institutions and financial sources` (Jolovic et al., 2014).

Serbia may be better placed than most to adapt to changes in extremes. In the established system of integral protection and rescue of population there is not any activity regarding farmers training in emergencies (Radovic et al., 2012). In this area Serbian emergency sector has to follow the positive practice from developed countries like United States of America and many others.

In light of the above, it is clear why development of sustainable agriculture and its protection from different risks started to be a great challenge for Serbian policy makers. Unfortunately, Serbian agriculture is at risks of being affected by many hazards, except extreme weather and climate events. After all examination during this research, it is hard to except that the cooperation between emergency services and competent services of agricultural protection in country almost do not exist. Another important stakeholder in this area has to be academic community and its task is development of adequate curriculum regarding protection of agriculture from different risks like Cornell University in Ithaca, New York, Harper Adams University College, Newport, Shropshire in the United Kingdom and etc.

Results and discussion about local capability for sustainable development of the Republic of Serbia

The Sustainable development Strategy for Serbia (Official Gazette of the Republic of Serbia, no. 111/09) identifies a need for an action plan for the adaptation of economic sectors to climate change. Therefore the research which investigates local capability for sustainable development of the RS presented in this chapter is extremely important as a tool of monitoring and guidelines for a future decision of policy makers.

Cluster analysis produced a clear picture of three distinctive groups of municipalities presented in Table number 1. On the basis of cluster analysis, groups can be named by capability as: very capable-1; capable 2, and less capable 3. In the analysis of the group is found that in the first group of "very capable" is recognized only one municipality (city) - Novi Sad. It is belong to this group because of higher potential in demography, economic development, social status and demographic conditions.

Group `capable` consist of 31 municipalities with majority values above average, except those that present revenue and earnings as well as the expenditures of the budget and the share of voters who voted in 2012. Other 133 municipalities has been part of `less capable`, where are all values under average, except the share of voters who voted in 2012, thus they need help of the central government or other donors in case of emergency.

Table 1. Number of municipalities in every group

Group	Number of municipalities	Number of municipalities (in percentages)
Very capable -1	1	1.65%
Capable – 2	31	17.75%
Less capable – 3	133	80.60%
Total	165	100%

Source: Radovic, Marinčić, 2013.

These results can be visualized by the Geographical Information System (GIS) layer and regarding to this tool is obvious that 80.6% of municipalities need help in face of emergencies; 17.75% is able to decrease its security threats. Only Novi Sad is very capable to provide normal living conditions in emergencies to its citizen. The percentage of the municipality's membership in each group is as follows: very capable 1.65%; capable 17.75%, and less capable 80.60%.

The final results of the project and the status of local governments in the Republic of Serbia are important because they represented the basic platform for the involvement of other research methods and results in the continuation of the research, and as useful guidelines for policy makers. Classification of individual municipalities into groups, based on their capacity to implement the concept of sustainable development provided a general picture of the municipal administration and their capacity to respond to multidimensional security threats promptly and efficiently.

Predicting risks and response on them adequately

Even though, Serbia has made progress adopting environmental laws, as well as in harmonizing Serbian regulations with European Union (EU) norms - challenges regarding the implementation of climate change adaptation measures remain important, according to the reports of the international organizations. In a recent report, it is stated that the level of integration of climate change into development strategies, the level of knowledge, institutional capacities and the availability of technologies are still far from below than necessary for an effective and fast response to combat climate change (Global risk identification program - GRIP, 2010).

Until recently the quality and quantity of weather data have been insufficient to allow credible examination of variable weather extremes. Serbia was obliged to perform a wide range of tasks in the field of agro meteorological, weather and hydrological services, but also flood and ice on rivers warnings and climate change. The role of the Republic Hydro Meteorological Service of Serbia (RHMSS) as a National Hydro Meteorological Service is enormous in this action, and, of course, based on the Law on Meteorological and Hydrological activity (Official Gazette of the Republic of Serbia, 2010). This organization has a numerous data about extreme climatic event in Serbia, during 2006-2008, as well as the consequences caused by those events. RHMSS is responsible for monitoring, detection of hazard forecast, and regarding to that obligation RHMSS established participation in the World Climate Program and regional cooperation with European Organization for the Exploitation of Meteorological Satellites (EUMETSAT), (www.eumetsat.int). They are responsible for implementation of the new five-year program of meteorological and hydrological development and research activities for 2012-2016, capacity building through the life learning program, improvement of international and regional cooperation by further strengthening the operational and development-research functions of sub-regional *South East European Virtual Climate Change Centre* and the partnership with the relevant national, regional and international institutions, etc. (RHMSS, 2011).

This activity is in compliance with the Law on E/S, and has a great impact on agriculture safety providing timely information of weather conditions. Increased awareness on protection of agriculture as an integral aspect of sustainable development and adaptation to climate change stimulated engagement of all stakeholders to promote joint activities towards better protection, enhanced coordination of relevant national, regional and local actors in agriculture. Academic community should be more involved in the issues of improvement of emergency management in the area of agriculture protection, because the provision of the financial resources, necessary to mitigate the numerous natural and anthropogenic disasters, could be very challenging in the future (Radović, Andrejević, 2011). This could be an additional cause for crises of agriculture in Republic Serbia as it had been pointed in the work of professor c and his colleagues (Pejanović et al., 2013).

The global climate change, which becomes more and more evident, is one of the major challenges of the future agriculture, asking for a rapid improvement of crops adaptability to the new climate conditions. There are many published articles in Serbia and in abroad agricultural journals about drought tolerance in main agriculture cultivars in Serbia. Moreover, in last few decades the Serbian Government financed lot of projects aimed to investigate cultivars tolerant to drought using either classical or modern selection processes. So, my suggestion to authors is to discard this sentence above.

There are many competent institutions in Serbia, in the area of integral disaster risk management and therefore agriculture protection, however, their work is sometimes very questionable due to the consequences in emergencies of all kinds. Therefore strengthening preparedness for emergencies and disasters, and mandatory preparing, testing, and updating of national, local and agricultural emergency plans are needed as permanent activity.

Conclusions

The concept of sustainability is evolving today and it needs to be shifted from the general to the operational level in order to support implementation in agriculture protection and forcing it on the way to sustainability. Extreme weather and climatic events are among the most serious risk to Serbian agriculture, and so on to the sustainable development implementation. Hence, these events in the Serbia may not in itself make citizens go hungry but its impact will exacerbate other pressures on food supply. Enhanced early warning systems are essential to reduce the risk of the extreme weather and climate events on agriculture. This action requires good collaboration and communication between all stakeholders.

It is obvious that it is a quest that will never be entirely completed, not just because of permanent dynamic changes in societies, but also because further improvements in sustainability will always be possible. By communicating more effectively with the local authorities, agricultural producers could be also able to make other positive features of their work, and through this more intensive contact with the emergencies force, become more familiar with the climate change; extreme weather and climate events become more able to respond on it efficiently.

Results engaging stakeholders to include the risk of extreme weather and climatic event in future agricultural protection strategies and creating specific education programs and training for agricultural protection in emergencies. After determining local capability for sustainable development of the Republic of Serbia the obvious is the conclusion that threat from those events additionally jeopardize in great scope sustainable development as a whole. Recommendations on agriculture protection in Serbia emphasize the need for wider input and coordination even through this remains a challenge for many developed countries. In the United States of America, The United Kingdom of Great Britain, Australia, Netherlands and many other countries decision-makers devoted substantial funds to support the agriculture, and make plans which incorporate the need for monitoring and mitigation of climate change in each sector related to agricultural production. That hard task is recognized in the Republic of Serbia and in the future academic and wider public expect faster results for the wellbeing of agricultural community and economic at whole.

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UTICAJ EKSTREMNOG VREMENA I KLIMATSKIH DOGAĐAJA NA SRPSKU POLJOPRIVREDU KAO FAKTOR RIZIKA ODRŽIVOG RAZVOJA

Vesela Radović[4], Radovan Pejanović[5], Dušan Marinčić[6]

Rezime

Republika Srbija trpi ogromne posledice izazvane ekstremnim vremenskim i klimatskim događajima . Uticaj ovih događaja na poljoprivredu je značajan , posebno imajući u vidu potrebu obezbeđivanja adekvatnih uslova za koncept implementacije održivog razvoja.

Ovaj rad ima za cilj da promoviše strateški pristup u zaštiti poljoprivrede od negativnih uticaja ovih događaja. Koristeći metodologiju karakterističnu u oblasti društvenih nauka, rad ukazuje na očigledan raskorak u praksi, i daje kratak osvrt na probleme prisutne u Republici Srbiji.

Stoga, uprkos činjenicama o brojnim faktorima koji doprinose trenutnom stanju, najslabija karika u zaštiti leži u nedovoljnom nivou koordinacije između zainteresovanih strana , posebno u oblasti planiranja budžeta i jačanja kapaciteta za reagovanje na lokalnom nivou. Srbija treba da se angažuje u istraživanjima u cilju ublažavanja posledica nastalih usled ekstremnih vremenskih i drugih klimatskih događaja na osnovu permanentne saradnje među svim akterima.

Ključne reči: *poljoprivreda, održivi razvoj, vremenski ekstremi.*

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Review Article

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LIMITATION OF TRADE MARGINS AS A MEASURE OF FOOD PRICE CONTROLS: EXPERIENCE OF SERBIA[1]

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Summary

The aim of this study is to examine the influence of trade margins limitations to the prices of basic food products and general price level in the Republic of Serbia. Assessing the effects of the Regulation on the margins limitations from 2012, this paper considers the purpose of applying this instrument of indirect price control. In practice, prescribing a maximum trade margins can have positive effects on the food market stability only in the short term. It is therefore necessary a broader consideration of the factors of pricing on the food market and food inflation regulation by economic policy measures. A particular problem is the low degree of competition in the trade sector, which significantly affects the prices of the final products. Food price movements are very unstable, while their share in the consumer price index in the Republic of Serbia is significantly. It is logical to conclude that food prices have a dominant influence on inflation, so that the government actions in this area are justified.

Key words*: limitation of trade margins, control of food prices, inflation, trade sector, competition.*

JEL: *E31, E64, Q11, D40*

Introduction

Price control by a government exists in all economies. It is introduced when policymakers believe that the market price of a good isn't fair to the buyers or sellers (Mankju, Tejlor, 2008). In modern economies the upper limit of prices is mainly controlled. This is because developing countries often face with inflation, which is a major economic disorder whose

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effects are reflected at the macro and micro level. From the microeconomic point of view, inflation directly causes a decline in the purchasing power of the population, while at the macro level leads to macroeconomic instability. To prevent this, governments have at their disposal various instruments and measures to control prices.

Prescribing the maximum and minimum prices is in the domain of direct price control. The aim of maximum prices is to protect consumers from excessive price increases, primarily when it comes to basic, essential goods whose prices significantly determine the general price level, such as following goods: bread, milk, oil, sugar, flour, etc. These prices are defined for a specific time period and can be corrected only after its expiration. In Serbia is still in effect the Regulation of bread price limitations (type "Sava") in order to protect the purchasing power of the lower social categories of the population (Uredba o obaveznoj proizvodnji i prometu hleba od brašna "T-500", 2012). Price level is determined in relation with the market situation and adjusted accordingly after a certain period of time. On the other hand, there is the practice of determining the minimum prices that protect the revenue of manufacturers. In particular, they are present within agriculture as the primary economic activity. In this case, the aim is to provide a decent standard of living for farmers in the case of a fall in market prices due to oversupply relative to demand. Many economists point out that the measures of direct price control could only solve problems in the short term. These measures are almost non-existent in the developed market economies. Therefore, in the economic practice of many economies is more frequent influence on prices by measures of indirect government regulation.

A significant number of products are influenced by direct and indirect price controls, and they are included in the calculation of the consumer price index, which suggests that government intervention is very important from the standpoint of preserving market stability. Indirect measures of price regulation include stockpiles, international trade policy measures, fiscal and monetary policy. They are instruments of economic policy which have the function of price stabilization. A special aspect of the indirect price control is adoption of positive legislation by the government, which determines the specific terms of trade of certain products. One of these instruments, which will be analyzed in this paper, is the Regulation of trade margins limitation at 10% for basic food products (hereinafter: the Regulation). In this way, the government regulates the relations in markets that are volatile and which largely causing an increase in the general price level. This protects the living standards of consumers, primarily those with lower incomes who spend relatively more on basic needs.

It is important to point out that limiting of trade margins can't directly affect prices. For example, an increase in purchase prices can lead to an increase in selling prices, even in cases of reducing the margin rate. Also, it should be noted that although the government intervention in the price area can have significant effects, the free operations in the market in the long run are in the basis of each economic policy (Stojanović, 2012). In the most market economies, the indirect measures of price controls are increasingly less applied. The dominant purpose becomes to attract and stimulate the entry of new competitors in the field of trade, including retail and wholesale. Only the competitive business environment can provide an adequate quality, prices and the rise in social

welfare. Until the establishment of such a situation in the food market, the government will have to intervene in the trade sector to prevent the overflow of oligopoly prices on inflation, which threatens undermine the value of key macroeconomic indicators (balance of payments, exchange rate, standard of living).

Methodology and data sources

Food prices are a major factor in the rise of inflation in Serbia. Increase in food prices certainly, sooner or later, reflect in the inflation rise in the country (Gregorio, 2012). Their share in the consumer price index is about 34%, based on the data of the Statistical Office of the Republic of Serbia. Also, the price volatility of agricultural products and foodstuffs is very important. It was described in the report of OECD (2011) and in the one of Wilson's works (2012). Therefore, the measures of price controls just bind most of the food market. Percentage limits trade margins, as well as products to which the percentage refers, are derived based on the Regulation in the Official Gazette of Republic of Serbia. The aim of this Regulation is to limit the rise in food prices as a result of the low level of competition in the food market (trade sector) in Serbia.

Firstly, we have analyzed the situation in the trade sector of the Republic of Serbia. Then, using the comparative method, we have presented researching results bearing in mind the official data. Finally, we have included some of the most important factors that have hindered the effect of the Regulation.

By using the data of the Ministry of Internal and External Trade and Telecommunications of the Republic of Serbia, which referred to prices of products that were covered by the Regulation, we come to know about food prices, as well as the effect of price control measures. Data analysis was conducted in the months that are important from the point estimates of the effects of the said Regulation (December 2011, January 2012, December 2012, and January 2013). By monitoring of changes in each of the product markets are derived conclusions about price trends and factors that contribute to it. It is also the main goal of this research.

Features and degree of competition in the retail sector in Serbia

The trade sector has "mediating function" and thus has decisive role in the pricing of the final food. On the other hand, the prices of food and non-alcoholic beverages in the consumer price index amounted to 34.52% (SORS, 2013). In the developed countries of Europe the percentage is almost twice smaller. From this, it can be concluded that the characteristics and specificities of pricing in the trade (and wider on food market) in Serbia have the large influence on the general price level in the national economy. Although contemporary governments rarely intervene in this area, there are specific situations in which they should operate from the viewpoint of the whole society. Monopolized markets are a striking example where it is badly needed government regulation in the field of prevention of price increases.

Contemporary markets are characterized by monopolistic and oligopolistic structures. This leads to a limitation of competition and inflationary tendencies due to excessive

prices by sellers. In today's economic conditions, it is common cooperation among enterprises in the form of secret negotiations and agreements, so-called secret oligopoly. In this case, two or more companies set their prices, volumes, market shares or make common business decisions. Imperfect market structures exist in many industries. In them the dominant players abusing their position by raising the prices and thus causing adverse effects on the living standard of consumers and the status of other "minor" sellers. The increase in prices reduces the purchasing power of consumers, while sellers, because the better negotiating skills, are able to determine better procurement conditions at the expense of the suppliers (Stojanović et al., 2010).

Inflationary effects of oligopolies can be particularly manifested if this market structure occurs in the production and distribution of basic goods. This case is typical for Serbia, given the low level of competition in the sugar, milk and oil market. Processors and retailers often dictate terms to producers and in the market of final consumption can abuse their position because of the low level of competition. On this basis, it can be concluded that monopolies (pricing policy) don't threaten only the final consumers, but also primary producers by low purchase prices and the effects of an increase in the rate of inflation are obvious.

One of the main reasons for the adoption of the Regulation is precisely the existence of a low degree of competition in the retail sector, which is a key reason for the high price of the final products. In Serbia, there is a gradual enlargement of the retail chain stores. It is expected that the Croatian "Agrokor" will buy "Mercator" and, after taking over the "Roda", will increase market share, which could result in abuse of dominant position, and consequently cause price increase. In this case, there will be form classic duopoly ("Agrokor" and "Delhaize" as the dominant market participants), and instead of war by low prices (because oligopolies don't like this) it is possible to enter into a public or secret agreements. The negative fact is that there are a small number of companies in a wholesale. This oligopolistic situation is unfavourable from the point of primary producers. In such relationships, buyers (wholesale trading companies) can significantly affect the level of prices or the volume of purchases by mutual agreements. The data show that the margins in the wholesale are higher than those determined by commercial enterprises in retail, that further affecting the expression of higher consumer prices, and therefore of the general price level.

Stimulating of foreign investment in the trade sector creates competition in developing countries, where are oligopolies and monopolies. Competition and trade liberalization are the best "medicine" for a price reduction within each country. Since 2000, in the trade sector was entered many international trading companies, such as: "Metro", "Mercator", "Interex", "Idea", "Delhaize". In Serbia is a low saturation of the market, which may attract some foreign companies that are still undecided to start a business in Serbia. Some of the reasons for this may include: political risk, corruption, low purchasing power of the population, administrative barriers and business risk. All these factors adversely affect the attractiveness of the market and discourage potential investors to participate in the trade sector of our country.

Effects of the Regulation of trade margins limitation from 2012

It can be seen that in the area of trading in Serbia is noticeable a low level of competition. Margins on individual products are much higher than in neighbouring countries. It can be said that trade is "responsible" for the manifestation of high food prices and overall inflation rate. It is therefore, in December 2011, the Government of the Republic of Serbia adopted the Regulation, which included limiting the overall rate of trade margin of 10% in the first half of 2012 (Uredba o posebnim uslovima prometa određene robe, 2011). While it is primarily planned that Regulation applies until the end of June, due to high inflation and, consequently, falling living standards of population, the Government decided to extend Regulation validity to the end of 2012. So, because it did not solve the initial problems, the Government has adopted a new Regulation on special trading conditions of certain goods (Uredba o posebnim uslovima prometa određene robe, 2012).

The measures of trade limiting are usually made for a period of no longer than six months, while in exceptional cases, there is a possible extension due to the weak effects of removing the initial cause. Constraints are usually introduced in the following situations: consumer protection, sudden changes or risk of large price changes, shortage of goods (primarily existential) for normal supply of population and economy and so on.

Products covered by the Regulation were: wheat flour (type 400 and type 500), eating sunflower oil, cow's milk (heat-treated), yogurt, sugar (white crystal), fresh meat (pork, beef and chicken) and freshwater fish. This act regulates the movement on the markets which most contribute to the rise in the inflation rate. In our country, there are the markets of main food products which are largely limited: oil, sugar and milk market. It is interesting to analyze the movement of prices of these products in the period before implementation, during implementation and after the abolition of the Regulation in the territory of the Republic of Serbia, as shown in the following table (Table 1).

Table 1. Comparative review of price movements of products covered by the Regulation of trade margins limitation in the period before implementation, during implementation and after its abolition

Products	Product prices in the analyzed months			
	December 2011	January 2012	December 2012	January 2013
Wheat flour (1 kg)	56.08	45.68	54.90	55.73
Pork meat (1 kg)	430.15	421.82	472.55	461.60
Chicken meat (1 kg)	233.86	235.18	313.76	318.01
Eating oil (1 l)	129.91	125.33	169.84	169.25
Milk (1 l)	86.62	81.69	96.16	96.89
Yogurt (1 l)	92.31	85.55	94.45	95.09
Sugar (1 kg)	103.82	95.40	95.34	94.13
Freshwater fish (1 kg)	683.56	669.72	777.29	792.35

Source: Authors' systematization on the basis of data of Ministry of Internal and External Trade and Telecommunications of the Republic of Serbia, 2013.

On the basis of Table 1, in Table 2 is shown a percentage change in prices in the first month of implementation of the Regulation. From *Table 2* it can be seen a decrease in prices of almost all products covered by the Regulation at the beginning of its implementation. Only the price of chicken meat is slightly increased. This means that retail margins were greater than 10% for basic food products before the adoption of this Government Regulation.

The data shows that margins were more than 20% for some food products (Lovreta, 2008). To prove it, a classic example is the promotional prices of certain products (for example, coffee). Its price is often lowered by up to 15% of the original (regular) price. High rates of margin aren't the result only of a lack of competition, but also a consequence of compensation of higher business costs because of the influence of many factors (drought, floods, rising of oil price). These factors are present in developed countries too, where the increase in food prices is a big problem. In Serbia, the high rate of margins in the retail is consequence not only of high market power of the participants, but also of higher margins in wholesale, which is a crucial factor for the higher trade margins in retail.

In the short term, the implementation of the Regulation has reduced the prices of almost all products whose prices are subject to analysis, so that its positive effects are felt immediately after the adoption.

Table 2. Percentage change in prices in the first month of the implementation of the Regulation

Products	Prices in December 2011	Prices in January 2012	The rate of price change
Wheat flour (1 kg)	56.08	45.68	-18,54
Pork meat (1kg)	430.15	421.82	-1,94
Chicken meat (1 kg)	233.86	235.18	+0,56
Eating oil (1 l)	129.91	125.33	-3,53
Milk (1 l)	86.62	81.69	-5,69
Yogurt (1 l)	92.31	85.55	-7,32
Sugar (1 kg)	103.82	95.40	-8,11
Freshwater fish (1 kg)	683.56	669.72	-2,02

Source: Authors' systematization on the basis of data of Ministry of Internal and External Trade and Telecommunications of the Republic of Serbia, 2013.

Increase the value of the basket of products is caused by the increase in prices of products covered by the Regulation, as well as other products in the group of food and non-alcoholic drinks. Value of the basket of goods was increasing continuously from month to month in the year when the Regulation was in force. The positive effects of the slower growth in prices of basic food products have disappeared because of circumstances and factors that affected food prices.

Table 3. Values of the category of food and non-alcoholic drinks and products covered by the Regulation

Category of products	The value of the product category in the certain month of the year			
	12/2011	1/2012	12/2012	1/2013
Food and non-alcoholic drinks	22.379.84	22.066.29	25.826.95	26.533.70
Group of monitored products	4.774.96	4.596.11	5.450.25	5.432.65

Source: Authors' calculation on the basis of data of Ministry of Internal and External Trade and Telecommunications of the Republic of Serbia, 2013.

Price movements were caused by other determinants that affect the food prices (exchange rate, inflation expectations, import costs, agricultural season and adverse weather conditions). Data on monthly rates of increase in prices located within Table 4. In September and October of 2012, despite the limitation of margins was a growth in consumer prices of 5.1%. In just two months, prices are increased as in developed countries for two or three year. Because of poor agricultural season (July and August), there was an increase in food prices due to shortages of goods. Effect of price increase of the raw food on final food products is delayed due to the time needed for processing of the primary products, as well as because of the use of food reserves from the previous period. Prices of raw foods (fruits, vegetables, eggs) increased by 24% and processed foods for 10.9%, while the overall increase in prices of food and non-alcoholic drinks in 2012 amounted to 15.4% (Ministry of Internal and External Trade and Telecommunications of the Republic of Serbia, 2013a).

The overall rate of inflation is very sensitive to changes in price of this product category in the consumer basket, because food has the largest contribution to the total current rise in consumer prices (Milanović et al., 2011). The rise in prices of alcoholic drinks and tobacco was highest (31.7%), but the contribution to inflation, due to a lower share of the consumer price index was only about 1.7 percentage points. The contribution to the rise in food prices to overall inflation rate was 6 percentage points (Ministry of Internal and External Trade and Telecommunications of the Republic of Serbia, 2013a). During this period, the share of food and non-alcoholic drinks in the structure of the consumer price index was 38.8%.

The increase in Value Added Taxes (VAT), and especially excises, in October, had an impact on food prices, because in food production (raw and processed both) costs of energy have significant share. The rise in prices of petroleum products (excise goods) was mainly influenced on the increase in consumer prices in October. High dependence on imports of energy also increases production costs in conditions of an increase in the exchange rate, which is also been manifested in mid of 2012. One study precisely analyzes the effects of the two market factors: prices of energy and agricultural commodities and exchange rate on food prices (Baek, Koo, 2010). From the Table 4 it is clear that the increase in food prices (during the autumn) had dominant influence on a monthly and later on the overall rate of inflation in the year.

Table 4. Monthly price growth rates in 2012

Consumer prices growth rates by months in 2012 (in %)											
I	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**	**X**	**XI**	**XII**
0.1	0.8	1.1	0.6	1.4	1.1	0.1	1.6	2.3	2.8	0.0	-0.4

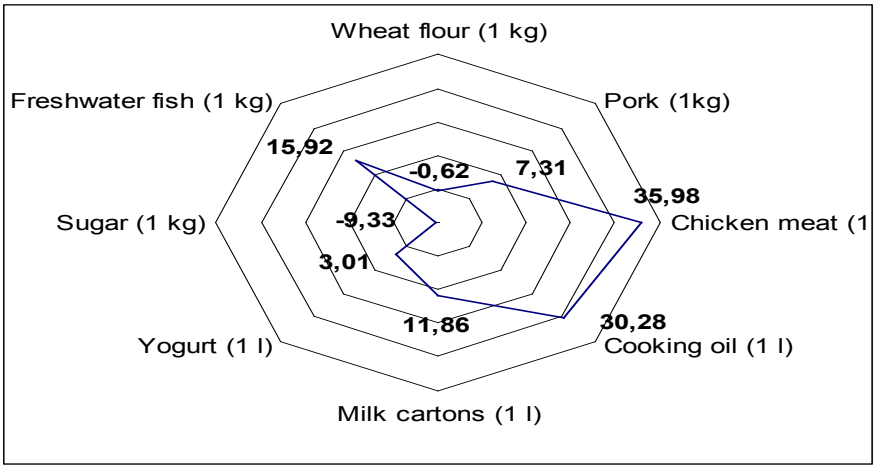
Source: Authors' systematization on the basis of data of Ministry of Internal and External Trade and Telecommunications of the Republic of Serbia, 2013.

During the 2012, there was a constant growth of the value of consumer basket and prices that are controlled by the government, i.e. the competent Ministry. Of course, it is not the role of government to fix prices, but it is imperative to achieve price stability in certain situations, which is important for the whole society. Because of the extremely unfavourable agricultural season, depreciation of the national currency and the unstable political situation, in order to prevent overflow of food prices, the government has used the system of stockpiles.

Food prices were directed in the desired direction by the stockpiles, in order to ensure macroeconomic stability and prevent overflow of food prices to inflation. Stockpiles include just the essential products: oil, sugar, meat, and inputs that are used for the smooth operation of the agricultural production. This prevents that rise in prices of these products affect significant increase in the general price level within the national economy. In order to stabilize the market in September, the government has decided to interventional selling 5 million litters of eating sunflower oil and 5 million kilos of sugar. The retail price of oil amounted to 142.56 RSD, while the price of sugar was 95.05 RSD (Ministry of Internal and External Trade and Telecommunications of the Republic of Serbia, 2013a). Serbian Government intervened with additional measures which aim was to help primary producers to freely continue with their production process (sales of raw materials (corn, wheat) for agricultural production at much lower prices).

Analyzing the rate of prices increases (January of 2014 compared to December of 2012) from Graph 1, it can be seen that the sugar market was stable, although there were problems at the end of the summer in the form of shortages on the shelves of retail stores. The price of sugar is even reduced due to Regulation and stockpiles. Prices of flour and yogurt were almost constant as well as a price of sugar. But, on the other side, there were significant market distortions in the market of eating sunflower oil. Oil price in the short term is increased by over 30%. Interventional sale of oil was only partially mitigating this increase in price due to rising of sunflower price because of bad weather conditions. Therefore, in October 2012, the government adopted Regulation amending the validity of the Regulation, which is the overall margin rate on eating sunflower oil further reduced to only 5% (Uredba o izmeni Uredbe o posebnim uslovima prometa određene robe, 2012). By the end of the year, the price of oil has stabilized. Regarding the price of the meat, particularly chicken, there has also been a significant growth. The key reason was the lack of fodder due to severe droughts in the summer, which was one of the warmest in recent years, and with very little rainfall. For this example, it can be seen that the market of agricultural produces is the major determinant of the food market stability.

Graph 1. Price increase (January 2013 - December 2011), in %



Source: Authors' calculation on the basis of data of Ministry of Internal and External Trade and Telecommunications of the Republic of Serbia, 2013.

After the completion of the implementation of the Regulation has been no major change in the price of these products. One of the main reasons is the stability of the exchange rate during this period (due to more restrictive monetary policy), constant prices of oil and petroleum products, as well as a fall in aggregate demand (NBS, 2012). Djukić and associates (2009) concluded that monetary policy is also an important factor limiting the effects of rising prices of food products on inflation.

Factors that limited the positive effects of the Regulation

Now let's see some of the factors that have prevented the expression of the positive effects of the Regulation. Climatic conditions in 2012 are almost halved crop of some primary products. The movement of world prices of agricultural products has also had an impact on the annual inflation rate. The high inflation rate of 12.2% in 2012 exhibited due to the low base (starting base) in the previous year. It is the largest increase in the general price level since adopting the consumer price index. In order to reduce the high budget deficit, in the second half of 2012 was made decision to increase the general rate of VAT. Even though the special tax rate hasn't changed, there has been some increase in prices of imported inputs (raw materials), which is indirectly reflected in the rise in prices. Given the strong correlation between the exchange rate and inflation, increase in exchange rate of nearly 9% in 2012, strongly defines the general price level due to the high import dependence on raw materials and energy, which have a significant share in the structure of production costs.

Monopolistic and oligopolistic market tendencies have caused the inefficiency of measures of state intervention in preventing inflation. These market situations are typical for developing countries that have underdeveloped market (Milanović et al., 2009). The low level of competition creates an enabling environment for increasing prices by sellers. If such situation is linked to the food market, there is a manifestation of the rapid increase

in the general price level. It is therefore important competition policy, which should be controlled and sanctioned the creation of monopolistic structure on the market, in order to prevent spill over of growth prices on inflation. The aim of competition policy is to prevent the dictation of prices by a monopolists or their dominant influence in the country with narrow and underdeveloped markets.

By eliminating the possibility of agreement between the major sellers, the state is fighting against monopolization of the market, restricting competition and spill overs of increase of monopoly prices to inflation. Competition policy is the government's measure of indirect price controls. Increasing competition affects the decrease in the product price, but also leads to an increase in social welfare. According to the list of the World Economic Forum, Serbia is among the countries with the highest impact of monopolies and cartels. This is the main reason why our country year after year recorded the highest inflation rates in the region.

Trade margins restriction had some negative implications. The Regulation caused negative effects on small traders, whose business is largely dependent on the sale of basic food products (Stojanović et al., 2012). Thus, a large number of smaller shops were forced to suspend its business or to realize the loss due to lack of income, so that it came to a further weakening of competition in the market. It is estimated that each year averaged two to three thousand small shops were closed because of the high costs and competition from large retail chains. They only survive in those market segments which are not covered by the "big stores" or where the most important factor for consumers, when they make purchase decisions, is market nearness.

However, there is an undeniable need for indirect price controls, which ensures the stability of food markets. Price volatility is a big problem in the short term and the impact of season is very important (Berument, Sahin, 2010). So, reaction of government is justified. In the long term it is necessary to significantly invest in agriculture to which the food industry and trade sector are multiply connected. Restricting of trade margins can prevent short-term negative price fluctuations over the sacrifice of profit by traders. But it is necessary to consider the problems faced by farmers and processors. In the food industry, the future courses of action must be: increasing competition, limiting the impact of a better bargaining position in relation to producers, strengthening the process of association of manufacturers and linking farmers for equality in bargaining.

Conclusion

Agriculture is usually highly dependent on natural factors, which initiates the need for government intervention in the regulation of markets of agricultural and food products. Limitation of retail margins for basic food products at 10% yielded some results in limiting the rise in prices at the beginning of its application. Prices of agricultural and food products are very unstable and short-term stabilization is necessary from the standpoint of preventing market disruptions and ensuring stability of prices. There are some objective factors which limited the effect of the Regulation. First, unfavorable climatic conditions have almost halved crop of certain products. Second, high inflation exhibited due to the low starting

base. Due to these facts, a stable exchange rate hasn't helped to decrease in product prices for consumer. This is because of present oligopoly trends in the food market in the country. Some measures of foreign trade policy have just alleviated inflation, such as the ban on exports and emergency imports from abroad. Growth in import costs (energy costs) due to the depreciation of the national currency had affected the increase in food prices, despite the trade margin limitations. There is a perception that, for the duration of the Regulation, the producers have raised prices, traders gave a higher rebate, which counteracts the effects of limiting margins on basic food products and affect the general price level.

Regulation has had a double effect: preventing market distortions and regular supply of basic food products. In addition, price controls protects the most vulnerable segments of the population from rising prices of the basic goods, but also prevents higher inflation distortions in the economy. Despite the limitation of margins, prices couldn't be held at a stable level due to the increase in producer (purchase) prices. Although margins are the same in relative terms, as they apply to producer prices, they grew in absolute terms and also are a factor of retail prices growth. Purchase prices were rising, bearing in mind the significant rise in oil prices on the world market, the depreciation of the national currency (increase in the exchange rate) and increase in prices of imported inputs (raw materials) used in production.

Regulation of retail margin imitations for basic foods at 10% didn't produce some great results in preventing price increases. Therefore, this act can only be support means to overcome the problem in the short term. Increasing competition in the food market and trade liberalization are possible ways of regulating inflationary disorders and preserving purchasing power of population.

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OGRANIČENJE TRGOVAČKIH MARŽI KAO MERA KONTROLE CENA HRANE: ISKUSTVO IZ SRBIJE

Snežana Radukić[4], Milan Marković[5]

Rezime

Cilj ovog istraživanja jeste da se sagleda uticaj ograničenja trgovačkih marži na cene osnovnih prehrambenih proizvoda i opšti nivo cena u Republici Srbiji. Procenjujući efekte Uredbe o ograničenju marži iz 2012. godine, u radu se razmatra svrsishodnost primene ovog instrumenta posredne kontrole cena. Rezultati pokazuju da propisivanje maksimalnih marži u trgovini može imati pozitivna dejstva na stabilnost tržišta hrane samo na kratak rok. Ističe se neophodnost šireg sagledavanja faktora formiranja cena na tržištu hrane i potreba da se ostalim merama državne regulacije utiče na inflaciju. Poseban problem predstavlja to što sektor trgovine, koji značajno utiče na cene finalnih proizvoda, karakteriše nizak stepen konkurencije. Kretanje cena hrane je veoma nestabilno, dok je njihovo učešće u indeksu potrošačkih cena u Republici Srbiji značajno. Nameće se logičan zaključak da cene prehrambenih proizvoda imaju dominantan uticaj na kretanje inflacije, tako da je delovanje države u ovoj oblasti opravdano.

Ključne reči: *ograničenje trgovačkih marži, kontrola cena hrane, inflacija, sektor trgovine, konkurencija.*

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AN ANALYSIS OF THE RELATION BETWEEN WINE CONSUMPTION AND CULTURAL MODELS[1]

Adrian Stancu[2]

Summary

The paper describes the correlation among grape-bearing areas, grape production, wine production, wine consumption and population figure for various countries. Secondly, it explains the correlation among wine consumption, wine consumer expenditure and a country's cultural model with reference to the population's religion in some countries. The statistical method used in testing these connections was the Bravais-Pearson correlation coefficient. An additional analysis of the distribution of grape production, wine production, and wine consumption for the world's top ten countries was made. Although wine consumption is banned by Islam, Buddhism and Hinduism, there are some Muslim, Buddhist and Hindu majority countries with a high level of wine consumption per capita. This high level is determined neither by the other religion population nor by foreign tourists, but rather by the way in which religion is understood and practiced by individuals.

Key words: *grape, wine consumption, wine consumer expenditure, cultural models, religion.*

JEL: *C10, E21, L66, Q02*

Introduction

Wine has been produced by people ever since the Neolithic period, between 8,000 and 3,500 BC, by crushing both grapes and date palm and allowing the resulting juice to ferment. Even today it is not clear in which part of the world the first wine was produced, either in China, Iran, Turkey, Armenia, Azerbaijan, Macedonia, or in Greece etc. Nowadays, the wine production in some European countries such as France, Germany, Austria, etc. is the result of the propagation of the wine technology by the Roman Empire (Hames, 2014; Vlahović et al., 2012).

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Although alcohol became a part of human consumption long ago, its adverse and beneficial health effects have only been recently highlighted (Ene, 2009). Therefore, numerous studies on vineyard soil, grape and wine quality were undertaken to identify if certain substances content (e.g. copper, zinc, manganese, etc.) does not exceed the allowable limits (Calin et al., 2012) or if new potential dangerous substances for human health become manifest.

The importance of wine for human consumption, along with other economic, social and technical factors, determined the appearance of wine tourism in the middle of the 19th century, even if testing wine and visiting vineyards as parts of an organized trip has been known since ancient Rome and Greece. Nowadays, there is no clear statistical data by country concerning wine tourism. The countries with wine tourism supply are considered the ones with the highest wine production, and are clustered into the 'Old World' (France, Italy, Germany, Spain, etc.) and the 'New Word' (New Zeeland, Australia, United States, South Africa, etc.) wine regions (Hall et al., 2002; Scutariu, 2013).

Goals, data sources and methodology

The first goal of the paper is to identify the type of correlation among grape-bearing areas, grape production, wine production, wine consumption, and population figures. The second goal is to test the way in which wine consumption, wine consumer expenditure, and cultural models, as determined by the population's religion, correlate.

Given these goals, a data set was built, which includes the grape-bearing areas, grape production, wine production, wine consumption, population figures, Muslim, Buddhist and Hindu population figures, and wine consumer expenditure by country in 2012 (Appendix 1).

Exhaustive data was included in Appendix 1 so as to guarantee the objectivity of the results. Although ten different sources were used to collect data, it was impossible to establish a complete database, because some countries did not report data, so it was recorded as not available (n/a).

Initially, Appendix 1 contained 242 countries. After double-checking the scientific references available, only 109 countries remained therein (from Afghanistan to Zimbabwe). This reduction was due to the lack of data, since some countries had data only for wine consumption and population figure, which was not enough to achieve the two above mentioned goals of the paper.

However, a further list of 43 countries' data (from Bangladesh to Uganda) was introduced at the end of the Appendix 1 in order to be used only in testing some correlations along with the existing 109 countries' data, to ensure more exhaustive data for analytical purposes.

In Appendix 1 it can be noticed that the wine consumption values expressed in liters per capita were calculated with four decimal places instead of two decimal places, which was used for wine consumption in liters per capita. The reason was to emphasize the low level of wine consumption in liters per capita in some countries (e.g. Iran) and to ensure the correctness of the data needed for analysis – otherwise, the reported values included in the Appendix 1 should have been zero.

As regards the statistical method, the Bravais-Pearson correlation coefficient was used to highlight the presence or absence of the correlations among grape-bearing areas, grape production, wine production, wine consumption, population figure, Muslim, Buddhist and Hindu population figures, and wine consumer expenditure.

The relation among grape-bearing areas, grape production, wine production, wine consumption and population figure

First of all, it is important to test the correlation between grape-bearing areas and grape production to point up the influence of atmospheric and economic factors on grape production (Table 1).

Table 1. Correlation between grape-bearing areas and grape production

		Grape-bearing areas
Grape production	Pearson Correlation	.899**
	Sig. (2-tailed)	.000
	N	109

Source: Author's own calculation based on data in Appendix 1.

Note: **. Correlation is significant at the 0.01 level (2-tailed).

The data in Table 1 show the presence of a strong and positive correlation grape-bearing areas and grape production. Thus, the higher the grape-bearing areas, the higher the grape production. The value of this correlation is not perfect (it should equal 1) due to the difference among the surveyed countries' grape production level, which is influenced both by independent factors (air temperature, atmospheric humidity, sunlight, rainfall, soil composition, etc.) and dependent factors (economic efficiency, harvest planning, etc.).

Secondly, it is useful to establish if all the countries that produce grapes are also wine producers (Table 2).

Table 2. Correlation between grape production and wine production

		Grape production
Wine production	Pearson Correlation	.798**
	Sig. (2-tailed)	.000
	N	109

Source: Author's own calculation based on data in Appendix 1.

Note: **. Correlation is significant at the 0.01 level (2-tailed).

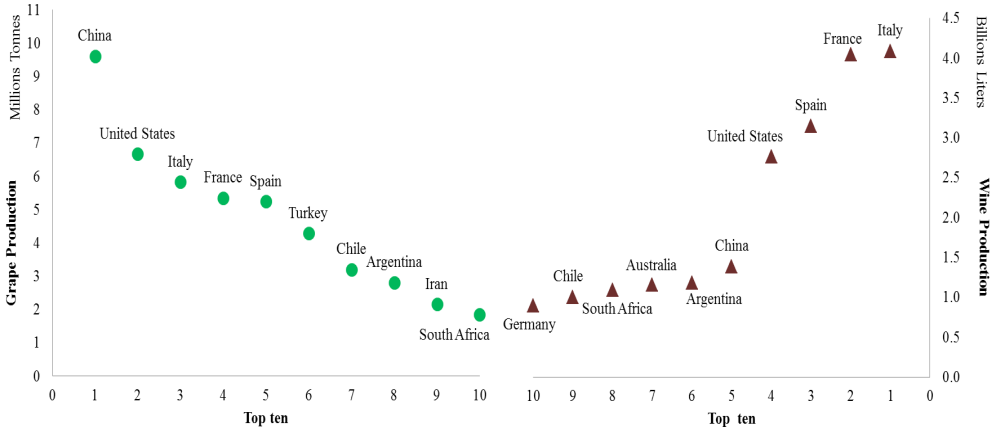
Due to the fact that the correlation coefficient value in Table 2 belongs to the interval [0.5; 0.8), (Lunau et al., 2013), there is a moderate and positive correlation between grape production and wine production. The correlation is not strong or perfect because, even though some countries produce grapes, these countries do not report wine production. The following cases have been identified:

- some countries have a Muslim majority population, e.g. Afghanistan (99.7%), Iran (99.5%), Yemen (99.1%), Iraq (99%), Occupied Palestinian Territory (97.6%), Libya (96.6%), Pakistan (96.4%), and Saudi Arabia (93%) (Pew Research Center, 2012). Hussain (2011) states that Islamic law prohibits alcohol consumption and that practicing Muslims do not drink alcohol irrespective of the type of drink and the time of day. This might be one of the many explanations for which these countries did not give details about their wine production. Instead, other countries that have a Muslim majority population as well, e.g. Morocco (99.9%), Turkey (98%), Jordan (97.2%), Azerbaijan (96.9%), Tajikistan (96.7%), Uzbekistan (96.7%), Egypt (94.9%), Turkmenistan (93%), Syria (92.8%), Kyrgyzstan (88%), Albania (80.3%), Kazakhstan (70.4%) and Lebanon (61.3%), (Pew Research Center, 2012) did report their wine production.
- some countries have both a Muslim majority population, e.g. United Arab Emirates (76.9%) Kuwait (74.1%), Bahrain (70.3%), and Qatar (67.7%), (Pew Research Center, 2012), and maybe a low quantity of wine production due to a low quantity of grape production, e.g. United Arab Emirates (55 tonnes), Kuwait (45 tonnes), Bahrain (145 tonnes), and Qatar (8 tonnes), (Food and Agriculture Organization of the United Nations Statistics Division, 2012b);
- some countries have a Muslim minority population, e.g. Tanzania (35.2%), Thailand (5.5%), Vietnam (0.2%), (Pew Research Center, 2012), and a slightly higher grape production, e.g. Tanzania (18,000 tonnes), Thailand (80,000 tonnes), Vietnam (15,308 tonnes), (Food and Agriculture Organization of the United Nations Statistics Division, 2012b);
- some countries have a Muslim minority population, e.g. Netherlands (6%) and the Philippines (5.5%), (Pew Research Center, 2012), and a low grape production, e.g. Netherlands (1,200 tonnes) and the Philippines (169 tonnes), (Food and Agriculture Organization of the United Nations Statistics Division, 2012b) and perhaps they do not produce wine;
- some countries have a very low Muslim population level, e g. Namibia (0.3%), Taiwan (0.1%), Venezuela (0.3%), Colombia (0.1%), and Guatemala (0.1%), (Pew Research Center, 2012), but they have a rather high grape production, e.g. Namibia (23,000 tonnes), Taiwan (99,267 tonnes), Venezuela (20,000 tonnes), Colombia (24,701 tonnes), and Guatemala (18,500 tonnes), (Food and Agriculture Organization of the United Nations Statistics Division, 2012b);
- some countries have a very low Muslim population level, e.g. Ecuador (0.1%) and Honduras (0.1%), (Pew Research Center, 2012), but they have a low grape production level, e.g. Ecuador (400 tonnes) and Honduras (182 tonnes), (Food and Agriculture Organization of the United Nations Statistics Division, 2012b);
- for some countries the economic efficiency of raisin production might be much higher than wine production (Subic et al., 2010), taking into account that these countries reported raisin production, e.g. Afghanistan (32,000 tonnes) and Iran (150,000 tonnes), (USDA, 2015).

The strong correlation between grape production and wine production is underscored by the following analysis of the distribution of grape production and wine production for the world's top ten countries as well (Figure 1).

In 2012 the main grape producers were China, United States, Italy, France and Spain and the main wine producers were Italy, France, Spain, United States and China.

Figure 1. Distribution of grape production and wine production for the world's top ten countries in 2012



Source: Author's own elaboration based on data in Appendix 1.

Although the hierarchy of the world's top ten countries is slightly different for both grape production and wine production, there are 8 out of 10 countries that take part in the two rankings at the same time, i.e. China, Italy, United States, France, Spain, Chile, Argentina and South Africa.

Turkey and Iran as major grape producers are no longer in the top ten of the most important wine producers. Their places were taken by Argentina and Germany.

Thirdly, the correlation between wine production and wine consumption was surveyed so as to emphasize if the countries that produce wine are the same with the ones that consume wine (Table 3).

Table 3. Correlation between wine production and wine consumption

		Wine production
Wine consumption	Pearson Correlation	.854**
	Sig. (2-tailed)	.000
	N	109

Source: Author's own calculation based on data in Appendix 1.

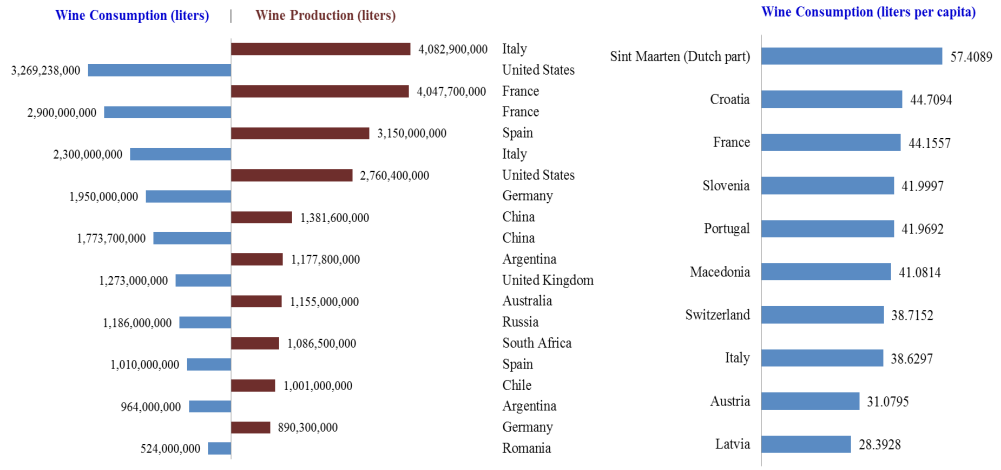
Note: **. Correlation is significant at the 0.01 level (2-tailed).

The Bravais-Pearson correlation coefficient in Table 3 is higher than .8, which means that there is a strong and positive correlation between wine production and wine consumption.

This indicates that most of the analyzed countries share both the culture of producing and that of consuming wine. According to the data in Appendix 1, there are 39 out of 109 countries that do not produce wine but consume wine instead, one (Réunion) out of 109 countries that does not consume wine but produces both grapes and wine, and one (Occupied Palestinian Territory) out of 109 countries that neither consumes nor produces wine, but instead produces grapes.

The strong correlation between wine production and consumption is also highlighted by the analysis of wine production and consumption for the world's top ten countries (Figure 2).

Figure 2. Distribution of wine production and consumption for the world's top ten countries in 2012



Source: Author's own elaboration based on data in Appendix 1.

The data in Figure 2 show a similar situation to the one described in Figure 1, i.e. that the hierarchy of the world's top ten countries is somewhat different for both wine production and consumption, but there are 7 out of 10 countries that belong to both rankings, such as the United States, France, Italy, Germany, China, Spain, and Argentina.

Instead, a significant disparity emerges between the hierarchies of the world's top ten countries concerning wine consumption expressed in liters and wine consumption expressed in liters per capita. Only France and Italy were present in both top ten countries hierarchies, which means that in these countries wine consumption has a relatively homogenous distribution among people from different categories defined by gender, age, disposable income, etc.

The main countries with the highest wine consumption per capita were Sint Maarten (Dutch part), (57.4089 liters per capita), Croatia (44.7094 liters per capita), France (44.1557 liters per capita), Slovenia (41.9997 liters per capita), and Portugal (41.9692 liters per capita). The explanation for Sint Maarten's (Dutch part) first place is that this country had a low population figure, but reported a rather high wine consumption, i.e. 2,244,000 liters.

Fourthly, testing the correlation between wine production and population figure, on the one hand, and between wine consumption and population figure, on the other hand, explains the possible influence of the population figure over wine production and consumption (Table 4).

Table 4. Correlation between wine production and population figure, and between wine consumption and population figure

		Population figure
Wine production	Pearson Correlation	.173
	Sig. (2-tailed)	.072
	N	109
Wine consumption	Pearson Correlation	.295**
	Sig. (2-tailed)	.002
	N	109

Source: Author's own calculation based on data in Appendix 1.

Note: **. Correlation is significant at the 0.01 level (2-tailed).

The Bravais-Pearson correlation coefficient values in Table 4 are significantly different. Thus, on the one hand, there is no correlation between wine production and population figure, and, on the other hand, there is a weak and positive correlation between wine consumption and population figure.

This situation demonstrates that the quantity of wine production obtained by a country does not depend on that country's population figure. The main factor determining wine production is represented by a country's geographical position, which ensures the specific pedoclimatic conditions for vines to grow and to produce grapes.

The vine *Vitis vinifera* is cultivated in areas between latitudes 30° and 50° north and south, but also near the Equator (Unwin, 2005). The grapes start to grow when the air temperature is higher than 10°C, at altitudes below 300 m above the sea level in cool regions, up to 1,000 m above the sea level in warmer regions and over 1,000 m above the sea level in hot and very hot regions (e.g. 2,000 - 2,600 m in Mexico, Bolivia, and Ecuador), (Creasy, Creasy, 2009; Skelton, 2009).

Nevertheless, the distribution and variation of temperature, sunshine and rainfall (400 - 800 mm per year) over several months depending on the northern or southern hemisphere is important (Unwin, 2005). The vine grows in different types of soil, but rock and wet subsoil close to the surface are not appropriate (Shry, Reiley, 2011).

However, wine consumption only slightly depends on the country's population figure because not every country's population consumes wine and, when people do consume wine, it is not a daily consumption.

Tamang and Samuel (2010) mention that world dietary culture is based on staple cereal diets with some differences from a region to another, i.e. rice in Eastern countries, wheat and barley-based food in Western countries and Australia, sorghum and maize-based foods in Africa and South America etc.

Wine is not a staple food due to the low weight of wine consumer expenditure in the disposable income for most of the world countries (Appendix 2). Thus, in 2011 the top ten countries with the highest weight of wine consumer expenditure in the disposable income were Latvia (1.524%), Hungary (1.453%), Estonia (1.392%), Belarus (1.114%), Switzerland (1.092%), Argentina (1.024%), Sweden (0.995%), Belgium (0.946%), Poland (0.909%), and Czech (0.883%). By contrast, the countries with the lowest weight were Pakistan (0%), India (0.003%), Turkey (0.005%), Indonesia (0.005%), United Arab Emirates (0.007%), Egypt (0.008%), Ecuador (0.023%), China (0.036%), Vietnam (0.042%) and Nigeria (0.042%).

However, the data in Appendix 2 underscore something different about the weight of wine consumer expenditure in the alcoholic beverages consumer expenditure. For four countries the weight of wine consumer expenditure exceeded two thirds of the alcoholic beverages consumer expenditure, i.e. Switzerland (78.18%), Italy (69.87%), Portugal (69.37%), Belgium (68.95%), and for three other countries the weight of wine consumer expenditure was between a half and two thirds of the alcoholic beverages consumer expenditure, i.e. France (58.88%), Denmark (54.81%) and Tunisia (53.49%).

For 15 countries the weight of wine consumer expenditure was between one third and a half of the alcoholic beverages consumer expenditure, i.e. Sweden (49.15%), Netherlands (48.08%), United Kingdom (47.87%), Algeria (47.03%), Croatia (46.24%), Argentina (45.41%), Spain (44.23%), Greece (38.07%), Germany (37.31%), New Zealand (37.15%), Ireland (36.82%), Norway (36.49%), Singapore (36.26%), Australia (34.85%) and Hong Kong (34.69%).

Instead, Pakistan (0%), India (0.56%), Turkey (2.76%), Thailand (2.92%), Colombia (3.10%), Venezuela (3.19%), Bolivia (3.98%), Jordan (4.22%), Vietnam (4.45%) and Ecuador (4.67%) had the lowest weight of wine consumer expenditure in the alcoholic beverages consumer expenditure.

The relation among wine consumption, wine consumer expenditure and cultural models

It is helpful to find out how wine consumption per capita and wine consumer expenditure per capita correlate for a better understanding of the amount of money used to buy wine and the wine quantity that is consumed (Table 5).

Table 5. Correlation between wine consumption per capita and wine consumer expenditure per capita

		Wine consumption per capita
Wine consumer expenditure per capita	Pearson Correlation	.454**
	Sig. (2-tailed)	.000
	N	109

Source: Author's own calculation based on data in Appendix 1
Note: **. Correlation is significant at the 0.01 level (2-tailed).

The Bravais-Pearson correlation coefficient value in Table 5 belongs to the interval [0.1; 0.5), (Lunau et al., 2013). Thus, there is a weak and positive correlation (but very close to a moderate correlation because the value is near .5) between wine consumption per capita and

wine consumer expenditure per capita. So, in the case of some countries, the more people consume wine, the more they spend money on buying wine.

The reason for a weak correlation between wine consumption per capita and wine consumer expenditure per capita is that, even if some countries had very close values of wine consumption per capita, e.g. Lithuania (0.1195 liters per capita), Vietnam (0.1407 liters per capita), they recorded substantial differences between their wine consumer expenditure per capita, e.g. Lithuania (118.32 US$ per capita), Vietnam (0.22 US$ per capita), (Euromonitor International Ltd., 2013b).

There are at least two essential factors that generated these disparities:

- the consumer's buying price for wine is significantly different from a country to another;
- wine consumption does not have a normal distribution among all the people in a country. There are people who belong to some social categories that consume and spend more money on wine than others.

One of the many influential factors of wine consumption is the country's cultural model which is determined by religion. Alcohol consumption is banned according to the holy books of some religions.

Alcohol or wine consumption represents a vice for the following sacred writings (Kalman, 2009; Robertson, 2004; Worden, 2003):

- in the Qur'an of Islam it is written that "Surely wine and gambling and stone pillars and divining arrows are an abomination of the work of Satan" (Fuller, 1996);
- in the Tipitaka (Pali Canon) of the Buddhist religion, the fifth rule of the Novices' ten Abstentions (known as Sikkhāpadas) stipulates the "abstinence from drinking wines and spirits" (Allen, 2008);
- in the Bhagavad-Gita of Hinduism it is asserted that "Such demoniac people are only attracted by wine, women, gambling and meat-eating" (Bhaktivedanta Swami Prabhupada, 2004).

Taking into account the wine consumption restriction in Islam, Buddhism and Hinduism, it is useful to identify how the wine consumption per capita and the country's weight of Muslim, Buddhist and Hindu population correlate (Table 6). The 152 countries' data were used in testing this correlation made by the standard 109 countries' data in the Appendix 1 and the 43 additional countries' data at the end of Appendix 1 which contain data only to be used in testing this correlation (wine consumption per capita and the country's weight of Muslim, Buddhist and Hindu population) and the next correlation (wine consumer expenditure per capita and the country's weight of Muslim, Buddhist and Hindu population) in order to ensure exhaustive data for analysis.

Table 6. Correlation between wine consumption per capita and the country's weight of Muslim, Buddhist and Hindu population

		Country's weight of Muslin population	Country's weight of Buddhist population	Country's weight of Hindu population
Wine consumption per capita	Pearson Correlation	-.352**	-.155	-.141
	Sig. (2-tailed)	.000	.057	.083
	N	152	152	152

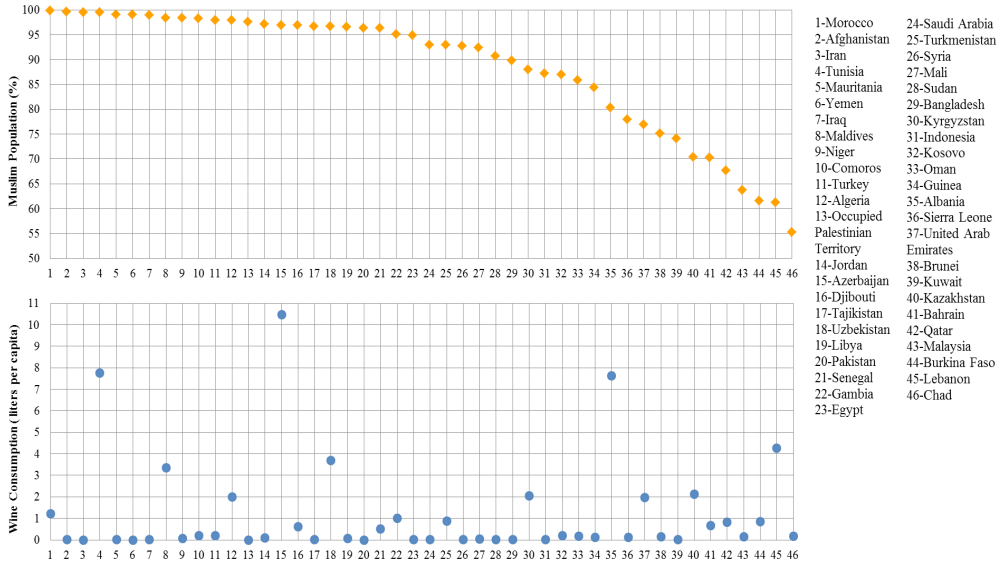
Source: Author's own calculation based on data in Appendix 1.

Note: **. Correlation is significant at the 0.01 level (2-tailed).

Firstly, the value of the Bravais-Pearson correlation coefficient shows a weak and negative correlation between wine consumption per capita and the country's weight of Muslin population. Hence, the higher the country's weight of Muslim population, the lower the wine consumption per capita.

This correlation is weak due to the fact that some Muslim majority countries have relatively high levels of wine consumption per capita. Thus, in Figure 3 is displayed the distribution of wine consumption per capita and the weight of the Muslim population for the world countries (46 countries according to Appendix 1) that have over 50% Muslim population.

Figure 3. Distribution of wine consumption per capita and weight of the Muslim population for the Muslim majority countries in 2012



Source: Author's own elaboration based on data in Appendix 1.

Countries such as Azerbaijan (96.9% Muslim population and 10.4564 liters per capita), Tunisia (99.5% Muslim population and 7.7662 liters per capita), Albania (80.3% Muslim population and 7.6383 liters per capita), Lebanon (61.3% Muslim population and 4.2623 liters per capita), Uzbekistan (96.7% Muslim population and 3.7012 liters per capita), Maldives (98.4% Muslim population and 3.3595 liters per capita), Kazakhstan (70.4%

Muslim population and 2.1320 liters per capita), Kyrgyzstan (88% Muslim population and 2.0586 liters per capita), Algeria (97.9% Muslim population and 1.9984 liters per capita), United Arab Emirates (76.9% Muslim population and 1.9560 liters per capita), Morocco (99.9% Muslim population and 1.2238 liters per capita), Gambia (95.1% Muslim population and 0.9999 liters per capita), Turkmenistan (93% Muslim population and 0.8794 liters per capita), etc. contribute to the weak correlation between wine consumption per capita and the country's weight of Muslin population.

The situation in the previously mentioned countries is the opposite of that in Occupied Palestinian Territory (97.6% Muslim population and 0 liters per capita), Iran (99.5% Muslim population and 0.0004 liters per capita), Yemen (99.1% Muslim population and 0.004 liters per capita), Pakistan (96.4% Muslim population and 0.0004 liters per capita), Bangladesh (89.8% Muslim population and 0.0005 liters per capita), Syria (92.8% Muslim population and 0.011 liters per capita), Tajikistan (96.7% Muslim population and 0.0012 liters per capita), Sudan (90.7% Muslim population and 0.0023 liters per capita), Saudi Arabia (93% Muslim population and 0.0029 liters per capita), Afghanistan (99.7% Muslim population and 0.0050 liters per capita), Mauritania (99.1% Muslim population and 0.0076 liters per capita), Kuwait (74.1% Muslim population and 0.0111 liters per capita), Indonesia (87.2% Muslim population and 0.0113 liters per capita), Iraq (99% Muslim population and 0.0130 liters per capita), etc.

Secondly, according to the values of the Bravais-Pearson coefficient in Table 6, which are statistically significant up to .05 level, there is no correlation between wine consumption per capita and the country's weight of Buddhist population, on the one hand, and between wine consumption per capita and the country's weight of Hindu population, on the other hand.

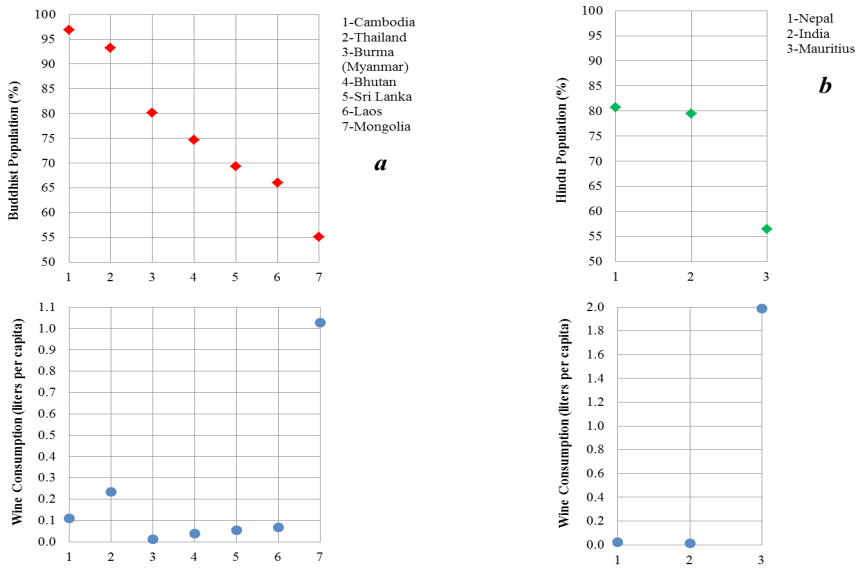
If a .1 level of significance is admitted, then the Bravais-Pearson coefficient in Table 6 shows a weak and negative correlation between wine consumption per capita and the country's weight of Buddhist population. The same strength and direction of the correlation is between wine consumption per capita and the country's weight of Hindu population.

The absence of any correlation for .05 level or the weak correlation for .1 level is explained in some way by the distribution of wine consumption per capita and the weight of the Buddhist and Hindu population for the Buddhist and Hindu majority countries (Figure 4). The seven countries that have over 50% Buddhist population and the three countries that have over 50% Hindu population alone cannot counterbalance the other world countries' high wine consumption.

In the case of the Buddhist majority countries, there are countries with both a low weight of Buddhist population and a low wine consumption per capita level, e.g. Burma (80.1% Buddhist population and 0.0130 liters per capita), Bhutan (74.7% Buddhist population and 0.0391 liters per capita), Sri Lanka (69.3% Buddhist population and 0.0543 liters per capita), and Laos (66% Buddhist population and 0.0667 liters per capita), that are opposed to others that have both a high weight of Buddhist population and a high wine consumption per capita level, e.g. Thailand (93.2% Buddhist population and 0.2355 liters per capita).

A similar situation is encountered in the Hindu majority countries, in which even though Nepal has a higher weight of Hindu population (80.7%) than India (79.5%), it also has a higher wine consumption per capita than India, i.e. 0.0222 liters per capita against 0.0116 liters per capita.

Figure 4. Distribution of wine consumption per capita and the weight of Buddhist (***a***) and Hindu (***b***) population for the Buddhist and Hindu majority countries in 2012



Source: Author's own elaboration based on data in Appendix 1.

Another important correlation which can be tested is between wine consumer expenditure per capita and the country's weight of Muslim, Buddhist and Hindu population (Table 7). Both the 109 and the 152 countries' data were selected to analyze this correlation by simultaneously using only the existing data for wine consumer expenditure per capita and still offering the possibility to compare the results with the previous correlation.

Table 7. Correlation between wine consumer expenditure per capita and the country's weight of Muslim, Buddhist and Hindu population

		Country's weight of Muslim population	Country's weight of Buddhist population	Country's weight of Hindu population
Wine consumer expenditure per capita	Pearson Correlation	-.358**	-.077	-.074
	Sig. (2-tailed)	.000	.426	.445
	N	109	109	109
Wine consumer expenditure per capita	Pearson Correlation	-.333**	-.105	-.105
	Sig. (2-tailed)	.000	.196	.196
	N	152	152	152

Source: Author's own calculation based on data in Appendix 1.

Note: **. Correlation is significant at the 0.01 level (2-tailed).

The values of the Bravais-Pearson coefficient in Table 7 for both the 109 and the 152 countries' data show, on the one hand, a weak and negative correlation between wine consumer expenditure per capita and the country's weight of Muslin population. Thus, the higher the country's weight of Muslim population, the lower the wine consumer expenditure per capita. The same strength and direction of the correlation is noticeable in the case of the wine consumption per capita and the country's weight of Muslin population.

There is no correlation between wine consumer expenditure per capita and the country's weight of Buddhist population for both the 109 and the 152 countries' data because the significance level (.426 and .196) considerably exceeds .05 or .1. The same absence of correlation is evident between the wine consumer expenditure per capita and the country's weight of Hindu population and is due to the high (.445 and .196) significance level.

Conclusions

There is a strong connection between the top ten countries with grape-bearing areas and the top ten countries with grape production. Countries such as Spain, France, Italy, China, Turkey, United States, Argentina, Iran and Chile are present in both hierarchies. Only Portugal which occupies the 10th place in the ranking of countries with the largest grape-bearing areas was replaced by South Africa in the ranking of countries with the highest grape production.

The weight of wine consumer expenditure in the alcoholic beverages consumer expenditure is higher than the weight of wine consumer expenditure in disposable income for most of the world countries. Thus, for consumers wine occupies an important place in the alcohol beverages category.

Six countries of the top ten countries with the highest wine consumer expenditure per capita were in the same top ten of the countries with the highest weight of wine consumer expenditure in the alcoholic beverages consumer expenditure, i.e. Switzerland, Sweden, Belgium, Denmark, France, and United Kingdom. Instead, only three countries of the top ten countries with the highest wine consumer expenditure per capita were present in the same top ten countries with the highest weight of wine consumer expenditure in disposable income, i.e. Switzerland, Sweden, and Belgium.

Switzerland and France were the only countries that belong to both the top ten countries with the highest wine consumption per capita and the highest wine consumer expenditure per capita. Thus, these states' populations spend more money on buying wine than others, if one takes into account that they consumed less wine than other countries' populations (e.g. France versus Sint Maarten - Dutch part and Croatia, on the one hand, and Switzerland versus Sint Maarten - Dutch part, Croatia, Slovenia, Portugal and Macedonia, on the other hand).

Even though wine consumption is prohibited by religions such as Islam, Buddhism and Hinduism, some Muslim majority countries (e.g. Morocco, Tunisia, Maldives, Algeria, Azerbaijan, Uzbekistan, Kyrgyzstan, Albania, United Arab Emirates, Kazakhstan, and Lebanon) reported over 1 liter per capita wine consumption. This unusual situation is because there are countries with both a higher weight of Muslin population and a higher wine

consumption per capita level than others with slightly lower weights of Muslin population and with a lower wine consumption per capita, e.g. Morocco, Tunisia, Maldives, Algeria, Azerbaijan, Uzbekistan, Kyrgyzstan, etc. against Indonesia, Oman, Guinea, Brunei, Kuwait, Malaysia, Chad etc.

The same situation is encountered in the Buddhist majority countries but to a lesser extent, i.e. only Thailand had a higher wine consumption per capita level and a lower weight of Buddhist population than Cambodia. Only one similar exception is found in the Hindu majority countries, i.e. India, which had a higher wine consumption per capita level and a lower weight of Hindu population than Nepal.

Supposing that only all the tourists that visited Muslim majority countries (World Tourism Organization, 2014) consumed wine, then the figures calculated by dividing the whole country's wine consumption by the total arrivals (i.e. tourists) would result in improbable data (very high wine consumption per capita) for some countries, e.g. Burkina Faso (58.9538 liters per capita), Azerbaijan (39.1304 liters per capita), Algeria (29.1951 liters per capita), Niger (16.1341 liters per capita), Tunisia (14.0672 liters per capita), Lebanon (13.8067 liters per capita), Gambia (11.4076 liters per capita), Sierra Leone (9.56 liters per capita), Comoros (7.7660 liters per capita), Senegal (6.7915 liters per capita), Albania (6.0899 liters per capita), Kazakhstan (5.8089 liters per capita), Kyrgyzstan (4.7976 liters per capita), Morocco (4.0488 liters per capita), if one takes into account the tourists' short stay.

For the Buddhist majority countries, the tourists' wine consumption level was slightly higher than the country's wine consumption, i.e. Laos (0.1330 against 0.0667 liters per capita), Cambodia (0.4528 against 0.1092 liters per capita), Thailand (0.7037 against 0.2355 liters per capita), etc. But there is one exception, i.e. Mongolia (4.6074 against 1.0281 liters per capita). In the case of the Hindu majority countries, in both Nepal and India the tourists' wine consumption level was considerably higher than the country's wine consumption, i.e. 0.7609 against 0.0222 liters per capita, and 2.1739 against 0.0116 liters per capita, respectively.

It is obvious that some Muslim, Buddhist and Hindu people in the Muslim majority countries consume wine because, by assuming that only their Christian, Unaffiliated, Folk Religion, Jewish, and other religion populations consume wine and calculating for this population the wine consumption per capita by dividing the whole country's wine consumption by the total number of Christian, Unaffiliated, Folk Religion, Jewish, and other religion population, unrealistic data were obtained, e.g. Morocco (1,223 liters per capita), Tunisia (1,553 liter per capita), Maldives (479 liters per capita), Algeria (95 liters per capita), Azerbaijan (337 liters per capita), Uzbekistan (112 liters per capita), etc. These values are much higher that the world highest level of wine consumption per capita, i.e. 57.4089 liters per capita.

Applying the same principle for the Buddhist majority countries, similar data were obtained but only for four countries with a high gap versus the initial level, i.e. Cambodia (9.9259 against 0.1092 liters per capita), Thailand (18.1178 against 0.2355 liters per capita), Bhutan (1.5637 against 0.0391 liters per capita), and Singapore (12.3094 against 5.7362 liters per capita). An identical situation occurred in the case of the Hindu majority countries, Nepal

(0.5054 against 0.0222 liters per capita), India (0.2182 against 0.0116 liters per capita), and Mauritius (7.3937 against 19889 liters per capita).

The differences between countries with the same majority religion population (Muslim, Buddhist or Hindu) related to wine consumption are explained by the importance of religion in the country's cultural model and the way it is understood and practiced by each person.

As for future research, it can focus on identifying some other correlation between a country's cultural model and the consumption of different food products as well as on analyzing the data by using additional statistical methods.

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Appendix 1. Grape-bearing areas, grape production, wine production, wine consumption, population figures, Muslim, Buddhist and Hindu population figures, and wine consumer expenditure by country in 2012

Country	Grape-bearing Areas (ha)	Grape Production (tonnes)	Wine Production (liters)	Wine Consumption (liters)	Population Figure	M*	B*	H*	Wine Consumption (liters per capita)	Wine Consumer Expen-diture (US$ per capita)
						(% of country's population)				
Afghanistan	61,690	590,065	n/a	149,000	29,824,536	99.7	0.1	0.1	0.0050	n/a
Albania	10,000	197,000	17,000,000	21,400,000	2,801,681	80.3	0.1	0.1	7.6383	n/a
Algeria	68,669	543,169	75,000,000	76,900,000	38,481,705	97.9	0.1	0.1	1.9984	3.49
Argentina	220,000	2,800,000	1,177,800,000	964,000,000	41,086,927	1.0	0.1	0.1	23.4625	67.97
Armenia	15,723	241,429	5,000,000	26,300,000	2,969,081	0.1	0.1	0.1	8.8580	n/a
Australia	148,489	1,656,621	1,155,000,000	521,400,000	22,723,900	2.4	2.7	1.4	22.9450	218.9
Austria	43,615	287,301	281,500,000	262,000,000	8,429,991	5.4	0.2	0.1	31.0795	106.22
Azerbaijan	12,443	150,987	5,000,000	97,200,000	9,295,784	96.9	0.1	0.1	10.4564	2.04
Bahrain	47	145	n/a	871,000	1,317,827	70.3	2.5	9.8	0.6609	n/a
Belarus	1,200	7,000	13,000,000	63,200,000	9,464,000	0.2	0.1	0.1	6.6779	58.76
Belgium	10	100	2,892,926	250,500,000	11,128,246	5.9	0.2	0.1	22.5103	252.25
Bolivia	4,300	28,000	7,000,000	9,500,000	10,496,285	0.1	0.1	0.1	0.9051	0.93
Bosnia and Herzegovina	5,500	25,931	5,000,000	49,500,000	3,833,916	45.2	0.1	0.1	12.9111	n/a
Brazil	82,603	1,514,768	194,000,000	382,000,000	198,656,019	0.1	0.1	0.1	1.9229	12.15
Bulgaria	77,341	260,673	123,600,000	142,000,000	7,305,888	13.7	0.1	0.1	19.4364	17.91
Canada	11,308	94,541	65,500,000	428,800,000	34,754,312	2.1	0.8	1.4	12.3380	176.6
Chile	204,000	3,200,000	1,001,000,000	248,400,000	17,464,814	0.1	0.1	0.1	14.2229	38.47
China	600,000	9,600,000	1,381,600,000	1,773,700,000	1,350,695,000	1.8	18.2	0.1	1.3132	1.23
Colombia	2,313	24,701	n/a	16,227,000	47,704,427	0.1	0.1	0.1	0.3402	5.28
Congo, Dem. Rep.	n/a	n/a	n/a	2,962,000	65,705,093	1.5	0.1	0.1	0.0451	n/a
Croatia	29,300	183,500	183,500,000	190,800,000	4,267,558	1.4	0.1	0.1	44.7094	65.64
Cuba	1,700	22,000	12,525,240	5,885,000	11,270,957	0.1	0.1	0.2	0.5221	n/a
Cyprus	9,262	47,006	8,400,000	15,900,000	1,128,994	25.3	0.2	0.1	14.0833	n/a
Czech	15,667	59,990	65,000,000	199,400,000	10,510,785	0.1	0.1	0.1	18.9710	89.24
Denmark	n/a	n/a	n/a	67,722,000	5,591,572	4.1	0.2	0.4	12.1114	242.78
Ecuador	62	400	n/a	5,154,000	15,492,264	0.1	0.1	0.1	0.3327	0.85
Egypt	66,262	1,378,815	3,000,000	2,000,000	80,721,874	94.9	0.1	0.1	0.0248	0.21
Estonia	n/a	n/a	n/a	3,731,000	1,325,016	0.2	0.1	0.1	2.8158	115.08
Ethiopia	2,200	5,000	1,264,898	616,000	91,728,849	34.6	0.1	0.1	0.0067	n/a
Finland	n/a	n/a	n/a	23,897,000	5,413,971	0.8	0.1	0.1	4.4140	217.27
France	760,805	5,338,512	4,047,700,000	2,900,000,000	65,676,758	7.5	0.5	0.1	44.1557	206.66
Georgia	45,000	144,000	95,000,000	75,900,000	4,490,700	10.7	0.1	0.1	16.9016	n/a
Germany	99,584	1,225,950	890,300,000	1,950,000,000	80,425,823	5.8	0.3	0.1	24.2459	122.22
Greece	99,200	978,200	315,000,000	303,100,000	11,092,771	5.3	0.1	0.1	27.3241	90.35
Guatemala	2,700	18,500	n/a	2,720,000	15,082,831	0.1	0.1	0.1	0.1803	n/a
Honduras	42	182	n/a	1,256,000	7,935,846	0.1	0.1	0.1	0.1583	n/a
Hong Kong	n/a	n/a	n/a	66,398,000	7,154,600	1.8	13.2	0.4	9.2805	40.27
Hungary	72,324	356,363	187,400,000	201,000,000	9,920,362	0.1	0.1	0.1	20.2614	74.86
India	112,000	1,240,000	11,500,000	14,300,000	1,236,686,732	14.4	0.8	79.5	0.0116	0.05
Indonesia	n/a	n/a	n/a	2,783,000	246,864,191	87.2	0.7	1.7	0.0113	0.16
Iran	215,000	2,150,000	n/a	30,000	76,424,443	99.5	0.1	0.1	0.0004	n/a
Iraq	11,000	226,718	n/a	425,000	32,578,209	99.0	0.1	0.1	0.0130	n/a
Ireland	n/a	n/a	n/a	25,601,000	4,586,897	1.1	0.2	0.2	5.5813	193.22
Israel	7,780	93,989	27,000,000	27,000,000	7,910,500	18.6	0.3	0.1	3.4132	34.77
Italy	696,756	5,819,010	4,082,900,000	2,300,000,000	59,539,717	3.7	0.2	0.1	38.6297	113.65
Japan	17,600	198,300	80,000,000	347,900,000	127,561,489	0.2	36.2	0.1	2.7273	33.62
Jordan	3,952	35,688	656,565	498,000	6,318,000	97.2	0.4	0.1	0.0788	0.02
Kazakhstan	10,000	71,700	20,000,000	35,800,000	16,791,425	70.4	0.2	0.1	2.1320	6.57
Kuwait	44	45	n/a	36,000	3,250,496	74.1	2.8	8.5	0.0111	n/a
Kyrgyzstan	5,498	7,850	2,000,000	11,543,000	5,607,200	88.0	0.1	0.1	2.0586	n/a
Latvia	n/a	n/a	n/a	57,760,000	2,034,319	0.1	0.1	0.1	28.3928	158.45
Lebanon	10,500	92,000	15,000,000	18,860,000	4,424,888	61.3	0.2	0.1	4.2623	n/a
Libya	8,300	33,000	n/a	438,000	6,154,623	96.6	0.3	0.1	0.0712	n/a

Country	Grape-bearing Areas (ha)	Grape Production (tonnes)	Wine Production (liters)	Wine Consumption (liters)	Population Figure	M*	B*	H*	Wine Consum-ption (liters per capita)	Wine Consumer Expen-diture (US$ per capita)
						(% of country's population)				
Liechtenstein	n/a	195	60,606	135,000	36,656	5.0	0.1	0.1	3.6829	n/a
Lithuania	n/a	n/a	n/a	357,000	2,987,773	0.1	0.1	0.1	0.1195	118.32
Luxembourg	1,223	11,318	13,200,000	4,836,000	530,946	2.3	0.1	0.1	9.1083	n/a
Macedonia	20,948	240,461	82,000,000	86,500,000	2,105,575	39.3	0.1	0.1	41.0814	n/a
Madagascar	2,500	13,000	9,000,000	11,300,000	22,293,914	3.0	0.1	0.1	0.5069	n/a
Malaysia	n/a	n/a	n/a	4,500,000	29,239,927	63.7	17.7	6	0.1539	6.25
Malta	1,620	4,555	4,000,000	9,700,000	419,455	0.2	0.1	0.2	23.1252	n/a
Mexico	26,915	375,298	102,000,000	149,900,000	120,847,477	0.1	0.1	0.1	1.2404	6.49
Moldova	129,351	505,917	385,000,000	39,500,000	3,559,519	0.6	0.1	0.1	11.0970	n/a
Montenegro	8,500	38,861	16,161,600	9,138,000	621,081	18.7	0.1	0.1	14.7131	11.29
Morocco	45,015	341,902	37,000,000	39,800,000	32,521,143	99.9	0.1	0.1	1.2238	1.67
Namibia	5,800	23,000	n/a	102,000	2,259,393	0.3	0.1	0.1	0.0451	n/a
Netherlands	200	1,200	n/a	356,000,000	16,754,962	6.0	0.2	0.5	21.2474	121.46
New Zealand	34,605	340,000	215,000,000	73,600,000	4,433,000	1.2	1.6	2.1	16.6028	156.21
Nigeria	n/a	n/a	n/a	39,360,000	168,833,776	48.8	0.1	0.1	0.2331	0.41
Norway	n/a	n/a	n/a	82,404,000	5,018,573	3.7	0.6	0.5	16.4198	294.46
Occupied Palestinian Territory	2,200	16,000	n/a	0	4,219,000	97.6	0.1	0.1	0.0000	n/a
Pakistan	15,600	63,500	n/a	71,000	179,160,111	96.4	0.1	1.9	0.0004	n/a
Paraguay	349	1,936	6,000,000	22,800,000	6,687,361	0.1	0.1	0.1	3.4094	n/a
Peru	18,483	365,114	66,000,000	63,200,000	29,987,800	0.1	0.2	0.1	2.1075	30.19
Philippines	370	169	n/a	9,920,000	96,706,764	5.5	0.1	0.1	0.1026	0.4
Poland	n/a	n/a	n/a	81,000	38,535,873	0.1	0.1	0.1	0.0021	41.15
Portugal	179,500	839,500	585,700,000	441,300,000	10,514,844	0.6	0.6	0.1	41.9692	130.52
Qatar	3	8	n/a	1,671,000	2,050,514	67.7	3.1	13.8	0.8149	n/a
Réunion	30	240	30,303	0	865,000	4.2	0.2	4.5	0.0000	n/a
Romania	177,661	746,385	405,900,000	524,000,000	20,076,727	0.3	0.1	0.1	26.0999	27.92
Russia	46,100	266,790	620,000,000	1,186,000,000	143,178,000	10.0	0.1	0.1	8.2834	67.03
Saudi Arabia	14,300	150,000	n/a	81,000	28,287,855	93.0	0.3	1.1	0.0029	n/a
Serbia	41,000	263,419	219,699,780	105,700,000	7,199,077	4.2	0.1	0.1	14.6824	23.21
Singapore	n/a	n/a	n/a	30,473,000	5,312,400	14.3	33.9	5.2	5.7362	42.27
Sint Maarten (Dutch part)	n/a	n/a	213,000	2,244,000	39,088	0.2	0.5	0.2	57.4089	n/a
Slovakia	10,492	52,209	36,900,000	84,200,000	5,407,579	0.2	0.1	0.1	15.5707	66.53
Slovenia	16,351	92,324	85,000,000	86,400,000	2,057,159	3.6	0.1	0.1	41.9997	50.55
South Africa	124,000	1,839,030	1,086,500,000	359,800,000	52,274,945	1.7	0.2	1.1	6.8828	26.2
South Korea	17,181	277,917	12,500,000	32,200,000	50,004,441	0.2	22.9	0.1	0.6439	20.32
Spain	943,000	5,238,300	3,150,000,000	1,010,000,000	46,761,264	2.1	0.1	0.1	21.5991	59.74
Sweden	n/a	n/a	n/a	62,769,000	9,519,374	4.6	0.4	0.2	6.5938	272.52
Switzerland	14,920	127,153	110,500,000	309,600,000	7,996,861	5.5	0.4	0.4	38.7152	502.78
Syria	45,000	325,000	85,859	24,000	22,399,254	92.8	0.1	0.1	0.0011	n/a
Taiwan	2,800	99,267	n/a	18,603,000	23,272,000	0.1	21.3	0.1	0.7994	35.25
Tajikistan	36,000	167,101	6,000,000	10,000	8,008,990	96.7	0.1	0.1	0.0012	n/a
Tanzania	3,600	18,000	n/a	4,286,000	47,783,107	35.2	0.1	0.1	0.0897	n/a
Thailand	4,500	80,000	n/a	15,730,000	66,785,001	5.5	93.2	0.1	0.2355	3.46
Tunisia	30,000	115,000	28,000,000	83,700,000	10,777,500	99.5	0.1	0.1	7.7662	1.97
Turkey	462,296	4,275,659	14,000,000	14,100,000	73,997,128	98.0	0.1	0.1	0.1905	0.32
Turkmenistan	18,500	240,000	18,000,000	4,549,000	5,172,931	93.0	0.1	0.1	0.8794	5.1
Ukraine	67,900	456,000	215,000,000	206,800,000	45,593,300	1.2	0.1	0.1	4.5358	19.08
United Arab Emirates	20	55	n/a	18,006,000	9,205,651	76.9	2.0	6.6	1.9560	1.99
United Kingdom	640	1,000	2,300,000	1,273,000,000	63,695,687	4.4	0.4	1.3	19.9857	183.56
United States	389,349	6,661,820	2,760,400,000	3,269,238,000	313,873,685	0.9	1.2	0.6	10.4158	84.84
Uruguay	8,000	130,000	110,900,000	93,400,000	3,395,253	0.1	0.1	0.1	27.5090	n/a
Uzbekistan	115,000	1,120,000	25,000,000	110,200,000	29,774,500	96.7	0.1	0.1	3.7012	n/a
Venezuela	1,100	20,000	n/a	17,224,000	29,954,782	0.3	0.1	0.1	0.5750	6.43
Vietnam	740	15,308	n/a	12,490,000	88,772,900	0.2	16.4	0.1	0.1407	0.22
Yemen	13,532	154,869	n/a	10,000	23,852,409	99.1	0.1	0.6	0.0004	n/a
Zimbabwe	390	3,200	3,030,300	5,258,000	13,724,317	0.9	0.1	0.1	0.3831	n/a
Bangladesh	n/a	n/a	n/a	77,000	154,695,368	89.8	0.5	9.1	0.0005	n/a

Country	Grape-bearing Areas (ha)	Grape Production (tonnes)	Wine Production (liters)	Wine Consumption (liters)	Population Figure	M*	B*	H*	Wine Consum-ption (liters per capita)	Wine Consumer Expen-diture (US$ per capita)
						(% of country's population)				
Benin	n/a	n/a	n/a	5,882,000	10,050,702	23.8	0.1	0.1	0.5852	n/a
Bhutan	n/a	n/a	n/a	29,000	741,822	0.2	74.7	22.6	0.0391	n/a
Brunei	n/a	n/a	n/a	57,000	412,238	75.1	8.6	0.3	0.1383	n/a
Burkina Faso	n/a	n/a	n/a	14,031,000	16,460,141	61.6	0.1	0.1	0.8524	n/a
Burma (Myanmar)	n/a	n/a	n/a	688,000	52,797,319	4.0	80.1	1.7	0.0130	n/a
Cambodia	n/a	n/a	n/a	1,623,000	14,864,646	2.0	96.9	0.1	0.1092	n/a
Cameroon	n/a	n/a	n/a	10,987,000	21,699,631	18.3	0.1	0.1	0.5063	n/a
Central African Republic	n/a	n/a	n/a	294,000	4,525,209	8.5	0.1	0.1	0.0650	n/a
Chad	n/a	n/a	n/a	1,978,000	12,448,175	55.3	0.1	0.1	0.1589	n/a
Comoros	n/a	n/a	n/a	146,000	717,503	98.3	0.1	0.1	0.2035	n/a
Cote d'Ivoire	n/a	n/a	n/a	28,552,000	19,839,750	37.5	0.1	0.1	1.4391	n/a
Djibouti	n/a	n/a	n/a	532,000	859,652	96.9	0.1	0.1	0.6189	n/a
Fiji	n/a	n/a	n/a	1,150,000	874,742	6.3	0.1	27.9	1.3147	n/a
Gabon	n/a	n/a	n/a	7,576,000	1,632,572	11.2	0.1	0.1	4.6405	n/a
Gambia	n/a	n/a	n/a	1,791,000	1,791,225	95.1	0.1	0.1	0.9999	n/a
Ghana	n/a	n/a	n/a	30,657,000	25,366,462	15.8	0.1	0.1	1.2086	n/a
Guinea	n/a	n/a	n/a	1,298,000	11,451,273	84.4	0.1	0.1	0.1133	n/a
Guinea Bissau	n/a	n/a	n/a	7,101,000	1,663,558	45.1	0.1	0.1	4.2686	n/a
Guyana	n/a	n/a	n/a	81,000	795,369	6.4	0.1	24.9	0.1018	n/a
Kenya	n/a	n/a	n/a	6,607,000	43,178,141	9.7	0.1	0.1	0.1530	n/a
Kosovo	n/a	n/a	n/a	343,000	1,807,106	87.0	0.1	0.1	0.1898	n/a
Laos	n/a	n/a	n/a	443,000	6,645,827	0.1	66.0	0.1	0.0667	n/a
Liberia	n/a	n/a	n/a	616,000	4,190,435	12.0	0.1	0.1	0.1470	n/a
Macao	n/a	n/a	n/a	7,189,000	556,783	0.2	17.3	0.1	12.9117	n/a
Malawi	n/a	n/a	n/a	1,090,000	15,906,483	13.0	0.1	0.1	0.0685	n/a
Maldives	n/a	n/a	n/a	1,137,000	338,442	98.4	0.6	0.3	3.3595	n/a
Mali	n/a	n/a	n/a	543,000	14,853,572	92.4	0.1	0.1	0.0366	n/a
Mauritania	n/a	n/a	n/a	29,000	3,796,141	99.1	0.1	0.1	0.0076	n/a
Mauritius	n/a	n/a	n/a	2,568,000	1,291,167	16.7	0.1	56.4	1.9889	n/a
Mongolia	n/a	n/a	n/a	2,875,000	2,796,484	3.2	55.1	0.1	1.0281	n/a
Mozambique	n/a	n/a	n/a	12,059,000	25,203,395	18.0	0.1	0.1	0.4785	n/a
Nepal	n/a	n/a	n/a	611,000	27,474,377	4.6	10.3	80.7	0.0222	n/a
Niger	n/a	n/a	n/a	1,323,000	17,157,042	98.4	0.1	0.1	0.0771	n/a
Oman	n/a	n/a	n/a	533,000	3,314,001	85.9	0.8	5.5	0.1608	n/a
Senegal	n/a	n/a	n/a	6,839,000	13,726,021	96.4	0.1	0.1	0.4983	n/a
Sierra Leone	n/a	n/a	n/a	717,000	5,978,727	78.0	0.1	0.1	0.1199	n/a
Sri Lanka	n/a	n/a	n/a	1,103,000	20,328,000	9.8	69.3	13.6	0.0543	n/a
Sudan	n/a	n/a	n/a	87,000	37,195,349	90.7	0.1	0.1	0.0023	n/a
Suriname	n/a	n/a	n/a	381,000	534,541	15.2	0.6	19.8	0.7128	n/a
Togo	n/a	n/a	n/a	12,053,000	6,642,928	14.0	0.1	0.1	1.8144	n/a
Trinidad and Tobago	n/a	n/a	n/a	1,223,000	1,337,439	5.9	0.3	22.7	0.9144	n/a
Uganda	n/a	n/a	n/a	1,005,000	36,345,860	11.5	0.1	0.3	0.0277	n/a

Source: Food and Agriculture Organization of the United Nations Statistics Division, 2012a, 2012b, 2012c, 2012d; The Wine Institute, 2012a, 2012b; The World Bank, 2015; USDA, 2012; Euromonitor International Ltd., 2013b, p. 119; Pew Research Center, The Pew Forum on Religion & Public Life, 2012, pp. 45-50, and author's own calculation based on data in The Wine Institute, 2012b, and The World Bank, 2015.

*M - Muslim Population Figure; B - Buddhist Population Figure; H - Hindu Population Figure.

Note: The following formula was used to convert tonnes in liters for wine production according to different sources used (Stoker, 2013, p. 43; FAO/INFOODS Databases, 2012, p. 9): $\text{Вино (мл)} = \text{Вино (г)} \cdot \frac{1\ (\text{мл})}{0.99\ (\text{г})}$

Appendix 2. Weight of wine consumer expenditure in the alcoholic beverages consumer expenditure and in disposable income in 2011

Country	Weight of wine consumer expenditure in:		Country	Weight of wine consumer expenditure in:	
	Alcoholic Beverages Expenditure (%)	Disposable Income (%)		Alcoholic Beverages Expenditure (%)	Disposable Income (%)
Algeria	47.03	0.193	Lithuania	15.19	0.658
Argentina	45.41	1.024	Malaysia	20.55	0.106
Australia	34.85	0.629	Mexico	5.45	0.093
Austria	31.42	0.391	Morocco	23.66	0.081
Azerbaijan	13.24	0.068	Netherlands	48.08	0.563
Belarus	25.50	1.114	New Zealand	37.15	0.779
Belgium	68.95	0.946	Nigeria	10.44	0.042
Bolivia	3.98	0.056	Norway	36.49	0.671
Brazil	20.45	0.165	Pakistan	0.00	0.000
Bulgaria	11.45	0.308	Peru	13.28	0.737
Canada	32.08	0.594	Philippines	21.28	0.142
Chile	27.41	0.426	Poland	27.57	0.909
China	11.80	0.036	Portugal	69.37	0.809
Colombia	3.10	0.072	Romania	23.46	0.651
Croatia	46.24	0.849	Russia	18.09	0.856
Czech	19.84	0.883	Saudi Arabia	n/a	n/a
Denmark	54.81	0.881	Singapore	36.26	0.152
Ecuador	4.67	0.023	Slovakia	26.53	0.635
Egypt	6.29	0.008	Slovenia	25.63	0.343
Estonia	28.07	1.392	South Africa	16.35	0.590
Finland	26.17	0.799	South Korea	17.69	0.155
France	58.88	0.750	Spain	44.23	0.308
Germany	37.31	0.439	Sweden	49.15	0.995
Greece	38.07	0.332	Switzerland	78.18	1.092
Hong Kong	34.69	0.137	Taiwan	27.44	0.254
Hungary	28.42	1.453	Thailand	2.92	0.095
India	0.56	0.003	Tunisia	53.49	0.066
Indonesia	5.19	0.005	Turkey	2.76	0.005
Ireland	36.82	0.836	Turkmenistan	16.46	0.203
Israel	27.17	0.188	Ukraine	17.47	0.614
Italy	69.87	0.460	United Arab Emirates	25.42	0.007
Japan	5.23	0.100	United Kingdom	47.87	0.740
Jordan	4.22	0.079	United States	23.21	0.242
Kazakhstan	11.08	0.129	Venezuela	3.19	0.087
Kuwait	n/a	n/a	Vietnam	4.45	0.042
Latvia	30.66	1.524	-	-	-

Source: Author's own calculation based on data from Euromonitor International Ltd., 2013a, p. 77, 183.

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DEVELOPMENT OF SREMSKI KARLOVCI WINE TOURISM AND INTEGRATION IN THE REGIONAL TOURISM OFFER

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Summary

Integration and globalisation processes are unavoidable in all fields of business economy, including tourism. Potential success of wine tourism in Sremski Karlovci should be based on diversification of products that entails an influx of tourism and winemaking into other fields of economy. During the development of wine tourism offer, it would be advisable to consult the experiences of the developed wine region and to use their models, which is done in this paper, via benchmark analysis of offers of Sremski Karlovci wineries with those of the Ontario region (Canada) and the place of Villány (Hungary). The goal of this paper is to establish the possible directions of development of the integral product of wine tourism of Sremski Karlovci as a prerequisite for integration into the regional tourism offer. The research indicates that wine tourism offer of Sremski Karlovci is underdeveloped. A large number of product diversification fields are not recognised. The future development of Sremski Karlovci wineries should be based on conquering of those very fields. Such a tourism product could more easily be integrated into the regional wine tourism offer.

***Key words**: wine tourism, integration, diversification, tourist product*

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Introduction

In the circumstances of the growing globalisation of world economy, each country strives to use its comparative advantages by transforming them into competitive advantages in order to ensure a long-term increase of life standard of inhabitants. European integration and globalisation require leaving behind an old way of thinking based on national particularities and territorial limitations. According to Kenichi Ohmae, region-state is the best unit of prosperity on the global stage, which can be further advanced by putting all regions under a large umbrella, such as European Union. It can stimulate free trade, legislative consistency and market integration (Ohmae, 2007). Knowing and monitoring these processes can help in finding waypoints for development of tourist destinations and respective specific positions of destination-states on tourism market. The last twenty years have seen a growing importance of service sector in the international exchange, among which tourism figures prominently (Arnaut, 2009). As regards tourist demand, changes have occurred in the structure of tourist needs, which thus go beyond the frames of the tourist model and shape tourism in accordance with the new life pattern and new values formed under the influence of globalisation (Pavlić, 2004). Changes in demand lead to diversification of activities within and without the borders of tourist industry.

Regionalisation goes in parallel with globalisation and entails a regional integration of global proportions. According to Arnaut (2009), the process of globalisation, European integration and tourism development need to be understood integrally. From the domination of the European micro-region world tourism has been opening new regional units with an accelerated tourist growth (Milenković, 2004). European tourism is developing regionally and that is why leading stakeholders in tourism must strive towards cooperation and inclusion into institutions, organisations, networks and funds that can raise the offer of wine tourism to an international level. One should also take into account the attitude of the World Tourism Organisation (UNWTO, 1998) that cites globalisation and localisation as the two most important trends that direct the tourist industry. Inclusion into processes of tourism integration and globalisation requires the development of such assortment of products and services of wine tourism that will completely respond to the needs of today's tourists. This primarily concerns raising the level of competitiveness and, accordingly, growth of quality of tourist services. The quality of services in tourism is conditioned with the technological factor reflected in the level of technical and technological amenities, quality of raw resources, position of building structures et cetera, as well as the subjective factor represented by knowledge, experience, will and capabilities of people working in tourism and other complementary sectors (Škrbić et al., 2010).

The development of competitive wine tourism offer of Sremski Karlovci is an entry point towards European integrations and, consequently, the global tourism market. Modern tourism is characterised by two tendencies: globalisation and diversification (Avelini, 2001). Globalisation as a supranational process changes fixed political, economic, social and cultural relations (Gligorić, 2007). Globalisation represents merging of national economies into a single (integral) economy (Koncul, 2004). The question is: what should wine tourism offer of Sremski Karlovci be like for European integration in this segment

to be successful and to realise a recognisable European identity? The first necessary step is a realistic assessment of possibilities to include Sremski Karlovci in European integrations through wine tourism. The problems on that way should be clearly defined and their solving should be an incentive to further development of processes of integration and globalisation. Integration and globalisation affect the growth of competition and own competitiveness should be based on the quality of offer of wine tourism. Wine tourism is widely recognized as a unique tourism product for visitors who are seeking authentic multi-dimensional experience, but at the same time it represents an innovative business opportunity for small-scale wine producers who wish to expand their wine production and meet the international demand (Kesar, Ferjanić, 2010; Mancino, Presti, 2012). Tourist product of wine tourism is here treated as an integral tourist product. It represents a whole system of products and services that are more or less based on or related to winemaking, in the function of meeting the needs of tourism. That is why it incorporates wine, wineries with sampling option, events, wine routes, souvenirs, educational courses and workshops, gastronomy, etc. Because of this, with the latest technology being introduced into Karlovci wineries, an important factor is played by not only the tradition and several centuries of experience, but also geographical advantages. The Danube reflects the sunlight and together with the specific microclimate gives the grapes grown in Sremski Karlovci 1-2% more sugar compared to grapes grown elsewhere in Vojvodina (Maksimović, 2013).

To take part in the globalisation process in tourism means to be recognisable in globalisation. The globalisation process simultaneously creates both threats and opportunities to the economic development of small countries in transition. Which of these influences will prevail chiefly depends on the ability of each country to realise necessary reforms for the increase of competitiveness (Arnaut, 2009). This competitiveness in contemporary wine tourism requires quality of wine as an obligatory condition, but also the quality of the integral tourist product – autochthonism, authenticity, interactivity and wholeness of tourist experience, which gives a chance to smaller countries to take part in wine tourism currents with their respective offers. Development of wine tourism affects the regional economy and the basic stimulus of wine tourism development is understanding of impact of wine tourism on the region (Škrbić, 2010). Thus, local development of wine villages, places and regions becomes a key to regional integrations. In the basis of tourist travel lays the motive to get to know that which is different and as yet unexperienced, hence diversity as an imperative in tourism. The tourists come to a certain area to experience and feel its character, food, way of life, cultural attractions (Pivac, 2012). This diversity, uniqueness, unrepeatability gives location to a certain place as well as a certain specific quality (Vojković et al., 2005). Research shows that there is a strong correlation between the tourist experience during wine sampling (sampling in contemporary wine tourism also includes animation, education, gastronomy, etc.) and loyalty to that wine brand (Bruwer et al., 2013). In wine tourism, wine brand is, at the same time, the brand destination itself in the function of local development. Inclusion of local population into wine tourism development, cooperation and networking are cited as key factors (Kesar, Ferjanić, 2010; Zamora, Bravo, 2005). This can also be the case of a diversified brand extension – expansion onto a completely new brand in the new industry

(Rakita, 2008). The offer of Sremski Karlovci wine tourism needs to be built through the symbiosis of all available resources, activities and industries, which opens a wide range of developmental possibilities through diversification of offer of wineries into other segments of economic activities. Experience of development of other successful wine regions can greatly help during the planning of development of Sremski Karlovci wine tourism offer and its inclusion into regional wine tourism networks.

Methodology and data sources

The subject of this research is the assortment of products and services of wineries of Sremski Karlovci in the field of wine tourism. Fifteen wineries were included, their tourism offer analysed from the aspect of diversity. The research employs analytic-synthetic, bibliographic-speculative and empirical methods. Data required for analysis were collected through interviews and surveys of owners/managers of those wineries in Sremski Karlovci that opted for the development of wine tourism. As secondary data sources, available internet sites relevant for target field were used, official reports of wineries and their associations, as well as bibliography. Data collected were processed by means of a comparative benchmark analysis, with nine analysed groups of factors relevant from the aspect of building an integral wine tourism product. This analysis did not include the quality of wines themselves, the starting assumption being that all wine tourism destinations produce wines of satisfactory quality. Scientific contribution of the paper is reflected in the synthesis and in-depth insight in the field of diversification and blending of winemaking and tourism products, as well as in an overview of ways to create more complex chains of value. The research results indicate possible guidelines for further development of the integral wine tourism product of Sremski Karlovci in order to enable a successful integration into regional tourism trends.

Quantitative indicators of wine tourism development

The global growth of wine tourism is difficult to monitor, seeing as there is no integrated database on the number of visits and tourist frequency on a global level. Due to the fact that wineries in certain regions with developed wine tourism are often joined in various forms of clusters, monitoring the activities of wine tourism is primarily the task of those clusters, hence the only currently available official data comes from certain clusters in regions with developed wine tourism. One must take into account that this data is a mere fragment of global activities of wine tourism, but can be clear indicators of development trends. The following question is that of which categories are the most representative of the increase of interest of tourists in wine tourism. As of now, there are no standardised aggregates of economy/tourism that can unequivocally assess the state of wine tourism, one of the reasons being the specificity of wine tourism and tourism in general, where certain forms of tourism intertwine in multiple ways, preventing any singular definitions. There is no universal definition of wine tourism (Đeđanski, Puzić, 2010). In practice, this means that the tourist who visits a village and enjoys the walk by the stream, watches birds, acquaints with the customs of the local population, eats local food and takes part in grape harvesting in a vineyard presents at the same time the rural, eco-, ethno, gastro, cultural and wine tourist. Certain experts in the field of tourism believe that one of the most reliable indicators of wine tourism development would be the number of

wine roads and their development, as well as establishment of certain rules and criteria to be used during monitoring.

Socio-economic benefits from wine tourism include a larger number of visitors, a longer stay and increased expenditure, greater satisfaction of visitors and more cellar wines sold (Pivac et al., 2009). In respect to this, France has passed a wine tourism development strategy the goal of which is to improve the cooperation between wine producers and the tourist industry (Hall, 2013). The results of the study reveal that the key factor of success is a harmonised marketing effort and strategic partnership between the stakeholders in wine tourism offer (Jones et al., 2013). However, as these presumptions were made only as a possibility of wine tourism monitoring development, not the current realistic possibility, this paper is going to feature available data on the economic impact of winemaking and wine tourism of Canada and the Ontario region in the function of analysis of possible directions of advancement of wine tourism offer and services in Sremski Karlovci.

In Canada, the industry of wine and grape production generates a yearly business income of 4.7 billion dollars, 879 million dollars in tax incomes and around 1.2 billion dollars of income in payable earnings. All of the above generates 6.8 billion dollars of overall economic impact. Each sold bottle of Canadian wine generates an average of 21.36 dollars of business income, 3.99 dollars of tax incomes and 5.41 dollar of earnings payable to the work force (Rimerman, Eyler, 2013). The data cited in the graph 1 below regarding the two most prominent Canadian wineries speaks in favour of the trend of growth of business income and employment in Canada in the field of winemaking in the period of 2005 to 2011.

Graph 1. Income and number of employees in companies of Constellation Brands and Andrew Peller, Ltd.

Source: Rimerman, Eyler, 2013.

Statistical data on partial shares of certain segments of winemaking and wine tourism from the aspect of incomes, employee earnings and number of employees, as well as other relevant indicators are given in Table 1.

Table 1. Economic influence of wine tourism of Canada and the Ontario region

Element	Ontario region	Canada total
INCOMES (in dollars)		
Winery income (on account of all activities and products)	530,774,000	1,145,671,000
Retail and restaurant industry income	77,204,000	230,950,000
Tourism (wine)	248,195,000	475,934,000
Wine research/education/consulting	5,452,000	8,337,000
Federal tax income	192,352,000	415,209,000
Local tax income	252,023,000	463,530,000
Other	369,386,000	715,555,000
Indirect income	524,949,000	1,036,050,000
Induced income	544,411,000	1,088,726,000
Overall income	**2,744,746,000**	**5,579,962,000**
Earnings (in dollars)		
Wineries	106,880,000	184,611,000
Restaurant industry and retail	23,225,000	64,238,000
Tourism	100,228,000	189,204,000
Wine research/education/consulting	3,442,000	5,854,000
Other	63,646,000	189,291,000
Indirect earnings	160,867,000	302,704,000
Induced earnings	135,163,000	255,047,000
Overall earnings	**593,451,000**	**1,190,949,000**
NUMBER OF EMPLOYEES		
Wineries	2,269	3,839
Restaurant industry and retail	1,421	3,725
Tourism	2,864	5,520
Wine research/education/consulting	78	139
Other	1,747	5,474
Indirect	3,143	6,585
Induced	2,852	6,088
Total employees	**14,374**	**31,370**
TOTAL ECONOMIC IMPACT (in dollars)	**3,338,197**	**6,350,210**
NUMBER OF WINERIES	**130**	**466**
NUMBER OF WINE TOURISTS	**1,900,000**	**3,000,000**
NUMBER OF GRAPE PRODUCERS	**478**	**1,308**
OVERALL TOURIST IMPACT (in dollars) (includes direct, indirect and induced incomes and earnings on account of wine tourism)	**643,798,000**	**1,218,065,000**

Source: Adapted from: Rimerman, Eyler, 2013.

Benchmark analysis and discussion

Benchmark analysis refers to the comparison of a certain subject with a referential subject and establishment of differences and potentials for further development of the compared subject. Benchmark analysis is not about automatic acceptance and application of successful practice of others, but about its creative adaptation to the concrete circumstances (Novović, 2008). In this research, tourist offer, service and product assortment of the Sremski Karlovci wineries were compared with tourist products and services offered by the wineries of the Ontario region in Canada and the town of Villány in Hungary. Seeing as quality grape vine and wine are the first and basic prerequisite for wine tourism development, it is understood that all three observed subjects meet this condition, so comparison is done exclusively according to tourist offer criteria.

Ontario was chosen as a benchmark for several reasons. The first reason was that Ontario wineries entered wine tourism currents less than 20 years ago, though Ontario itself had been recognised earlier as a tourist destination on other accounts, much like Sremski Karlovci. Ontario wineries attracted over 1,000,000 visitors in 2008 (Mikel, 2008), while in 2011 this number reached 1,900,000 (Rimerman, Eyler, 2013). The second reason is extraordinary results that the wineries in this area have achieved in wine tourism from the aspect of diversification and development of tourist products and services offered to wine tourists. Winemakers of this region claim that they do not sell bottled liquid, but culture turned into wine, best food and best art (Kislenko, 2007). All products and services have been carefully chosen and designed, characterised by local origin, authenticity and originality on the one hand, while on the other they have a strong market potential, economic validity and a high level of competitiveness on the global tourist market. The wineries of the Villány region were taken as one of the comparative benchmarks due to similarity with Sremski Karlovci in terms of size, population number and other natural and geographical features, but also progress achieved in wine tourism development in the same broader region as Sremski Karlovci.

The analysis gives information on the areas where there is potential for further development and diversification of assortment of the Sremski Karlovci wineries, but also gives concrete examples of good international practice that can be applied, with adequate corrections, on the territories of Sremski Karlovci. All data related to products and assortment of wineries of Ontario and Villány were obtained via websites and presentations of wineries and their associations, case studies and official reports. Data related to products and assortment of Sremski Karlovci wineries were obtained through a direct contact of researchers with the owners of 15 wineries and through websites of wineries and associations. The research encompassed those wineries in Sremski Karlovci that have (at least partially) expanded business into tourism and that are interested in further development in the field of wine tourism. Research was conducted in the period of December 2013 to March 2014.

With the purpose of systematisation and benchmark analysis, all services and products identified in the wineries of Sremski Karlovci, Ontario and Villány have been sorted in nine groups (Table 2).

Table 2. Parameters of comparison

No.	Group of products and services	Benchmark analysis parameters
1.	Bottled wine	Sale: of bottled wine, bottles of different volume, specialised packages, wine brand, existence of wine that is specific for a given area
2.	Public events and festivals	Frequency, number of visitors, programme production, involvement of wineries
3.	Winemaking, art and music	Existence of programmes and services based on the bond of winemaking and painting, diversity, creativity, interactive inclusion of visitors
4.	Wine routes	Wine routes, content, marking, quality and harmonisation of the support material with the routes
5.	Educational programmes, experience and sport-recreation programmes	Number of routes, thematic diversity, level of interactiveness, frequency of events
6.	Wine sampling	Sampling possibility, type of sampling, content and additional services, place of sampling
7.	Restaurants and gastronomic delights	Existence of restaurants, offer of gastronomic specialties, thematic cuisine evenings
8.	Internet sale	Possibility to order and pay via internet
9.	Web sites and winery	Existence of web sites, quantity and quality of information

Source: author's research

The analysis has been done separately for each group of products and services and consists of comparative review of products and services for all three groups of wineries (Tables 3-11).

Table 3. Benchmark analysis of bottled wine

Sremski Karlovci wineries	Villány wineries	Ontario wineries
-bottled wine, greater volume (1l; 0.75 l) -bottled wine, smaller volume (0.25 l) -each winery is known for a certain brand and brand names usually carry a family name or nickname. -the most famous wine is *bermet*, which is made from over 20 kinds of medicinal herbs -there are no specific wine packages.	-a large offer of white (Olaszrizling, Hárslevelű and Chardonnet) and red (Kékoportó, Kékfrankos, Pinot Noir, Merlot, Cabernet franc and Cabernet sauvignon) bottled wines (1 l; 0.75 l) -old Hungarian sorts are also being experimented with. -specialised packages of best quality wines made exclusively for specialised shops, connoisseurs and collectioners. -packages of "wine library" for buyers with the subtlest taste (Laposa, 2001) -Wine packages designed and packed as presents and souvenirs are also offered.	- bottled wine of greater volume (1 l; 0.75 l) - bottled wine of smaller volume (0.25 l) -every winery known for a certain wine brand -the most famous wine is "Icewine" made from frosted grapes -specially designed wine packages as presents and souvenirs -Loyalty club offers a discount with the possibility of arranging purchase and delivery of chosen wines on a quarterly basis.

Source: author's research

The Sremski Karlovci wineries offer a large number of bottled wines in adequately designed bottles of various volumes. However, the offer hardly ever includes online ordering, nor does it include specially designed wine packages. Further development should be directed towards the introduction of latest technologies into sale sector, but also towards creating various packages that would consist of more kinds of wine of various volumes that would represent the Karlovci offer and be appropriate souvenirs or presents.

Table 4. Benchmark analysis of public events and festivals

Sremski Karlovci wineries	Villány wineries	Ontario wineries
-"Karlovci grape picking" festival is organised to celebrate the grape harvest. -100,000 visitors yearly. -Wineries do not take part in the programme production and are represented only through wine sale.	-"Villány Red Wine Festival" is held on odd years to celebrate the grape harvest and is so popular that organisers are looking for new locations. -A range of events under the name of "Bacchus Days ", are held on even years. -A larger number of lesser events independently organised by wineries, such as "Gere jazz festival". -Result – inexistence of tourist season, with cellars and taverns open throughout the year.	-The greatest events are held around the middle of the year. They include over a 100 events during ten days. Tourists can sample best wines, enjoy in gastronomic specialties with music and parades. -Festivities at the end of January in honour of the frosted grape harvest for "Icewine" include a greater number of events taking place at various locations. -Exhibitions, seminars, celebrations and prize awards are organised in wineries themselves. -Also underway is the development of quality events in early spring and late autumn that will attract tourists in the off-season, as well.

Source: author's research

In Sremski Karlovci there is only one wine tourism event that does not adequately include wineries and winemakers. Creating a larger number of events, especially in the off-season, would significantly contribute to a greater interest, greater attendance and greater tourist demand. The tradition of Sremski Karlovci offers the possibility to conceive events of all kinds that can be blended with the wine experience.

Table 5. Benchmark analysis of the relation of winemaking and the art of painting

Sremski Karlovci wineries	Villány wineries	Ontario wineries
-The owner of the "Art et vinum" winery is an academic painter who uses his art pieces as bottle labels. "Days with the artist" offer the visitor the possibility to create art works with the owner of the winery. -In winery premises, there are no exhibitions or other art events. -Music and wine are related only through concerts within the "Karlovci grape picking" event. -One of the wineries offers traditional string band services after a prior reservation.	-Gere jazz festival presents a blend of wine, food and jazz music. -Rose Marathon is a summer festival of concerts, leisure, games and wine -European Convivial Song Festival celebrates 21st anniversary and gathers male choirs and soloists. -Some of the wineries have musical programmes during the samplings.	-Competition of artists for the best "Hildebrand" winery label. The best artworks are on the bottles of the most quality wines in limited and controlled series. -Wineries are hosts to a great number of exhibitions. -Music events take place at winery properties, such as the "Jazz & Blues" festival.

Source: author's research

The blend of wine and the art of painting is not represented in Sremski Karlovci and is, apart from one case, absolutely unknown. Vineyards and sampling places can be made into extraordinary exhibition spaces useful to both the artist and the winemakers and, when weather opportunities would allow, the same could be done with vineyards. Despite the large number of concerts offered to tourists in Sremski Karlovci none of them is in any way related to wine or wineries. The Karlovci wineries have beautiful outdoor and indoor locations that can be used in creation of music- and wine-based experience.

Table 6. Benchmark analysis of wine routes

Sremski Karlovci wineries	Villány wineries	Ontario wineries
-The recent period has seen an improvement in elementary infrastructure, especially the wine signalisation. -Waypoints and roadside signs mark 15 wineries willing to receive tourists. -Brochure "Wine road of Sremski Karlovci and Fruška gora" in Serbian and English and the map of the Karlovci wine road (Janković, 2012). This is the first marked wine road out of the total of ten in Serbia. -In 2008 the project of "Development of integral tourism based on wine roads", financed by the EU within the Hungary-Serbia Cross Border Cooperation programme and including the wineries of Sremski Karlovci was completed. However, in practice, things never changed, thus the routes mentioned in the project exist only on the paper.	-1994 saw the foundation of the Villány Siklós wine road – first of its kind in Hungary. It is 30 kilometres long and it initially encompassed 8 settlements, but in time this number grew. It is characterised by a good synthesis of elements of both wine tourism and other, tourist, cultural and natural sights, serving as a basis of local economic development. -Most wineries are located on the road itself and are relatively close to one another. They are open for samplings and some wineries offer accommodation, as well (www.visitbudapest.travel).	-Well marked wine routes with diverse content. Road signs for routes were placed by highways and other traffic lines. -Adequate catalogues and brochures offer valid information. Gastronomic brochures were written in such a way that they complement the wine route experience. -Wine routes are continuously being developed and marked.

Source: author's research

Wine routes are an indispensable part of offer of every wine region and their advancement and adequate promotion is a necessity if the Karlovci wineries wish to improve their offer and become competitive actors on the regional wine tourism market. Wine routes imply creative and substantial routes, clearly marked and harmonised with various materials that give all necessary information for a complete enjoyment in the overall route offer.

Table 7. Benchmark analysis of educational programmes and experience programmes

Sremski Karlovci wineries	Villány wineries	Ontario wineries
-"Art et vinum" winery organises "Days with the artist", offers an art workshop and the interested visitors can participate in work on a goat farm. Information on the abovementioned can be obtained only upon a direct enquiry with the winery owner. -Sremski Karlovci are also a center of embroidery, weaving and gugelhupf cake. There are workshops for gugelhupf making, as well as a presentation of ceramic souvenir creation methods, but joint experience programmes have not yet been offered.	- Wineries organising local excursions. - Wellness content on the basis of grapes and wine. -Wine museum. -Bicycle rent, horseback riding and Nordic walking with tours of wineries. -Boat rides along the Drava river with sampling of local wines.	- A number of various programmes. Some of them are based on winemaking and gastronomy and are aimed at tourists coming for short vacations or one-day excursions. Visitors have cooking lessons where they themselves cook using local ingredients under the guidance of hosts, chefs or other experts in culinary arts. Also on offer is a three-day "Canadian Wine & Culinary tour" where one can cook with different chefs and wines every day. -Some of the programmes show the very process of winemaking, with the visitors taking an active part in it. -Also available are programmes of education that cover the fields of enology and sommelier work. -If visitors wish to get deeper into smells and tastes of wine, they can visit the wine-mixing workshop, where they get three basic kinds of wine and the necessary equipment to make a combination according to their own preference, bottle it, put their own recipe label on it and take it as a souvenir. -There is also a special workshop where visitors get three plates with three different dishes and three basic kinds of wine, so they can taste and judge the suitability of dishes with various wines for themselves.

Source: author's research

Educational programmes, experience and sport/recreational programmes are mostly unrepresented in the Sremski Karlovci wineries. The exception is the "Art et vinum" winery that organises a yearly "Days with the Artist" event, where visitors can get involved in creative processes. However, this programme has more of a sporadic character and not that of an event created to complete the assortment of this winery. The development of services of this type, in addition to winemaking, can go in the direction of relating wine with weaving, embroidery, ceramics, but also gastronomy and enjoyment of nature.

Table 8. Benchmark analysis of wine sampling

Sremski Karlovci wineries	Villány wineries	Ontario wineries
-Samplings in all wineries have entered the wine tourism currents. This is the basic (if not the only) service that wineries offer to tourists. Between 3 and 7 wines are sampled, usually with gastronomic specialties, depending on the wine type. -Samplings take place in wine cellars or other adequate premises or vineyards themselves. -Wineries plan to build vaulted cellars in vineyards for tourism needs. -Every sampling is guided and includes a discussion on wine and winemaking adjusted to the visitor structure, their previous knowledge and interests.	-All wineries offer samplings, where one can get to know the winery and wine sorts -They take place in wine cellars, adapted halls or vineyard. -Transfer of visitors from wine cellar to vineyard is done by horse-drawn coaches or old-timer buses, which adds to the attractiveness of the experience. -Cold and/or hot serving gastronomically agrees with the wines sampled. -During the guided sampling, the host also reflects on the technology of wine production. -The possibility of organising feasts and events with the aim of acquaintance with winemaking customs and traditions.	-All wineries offer wine sampling. -Wine sampled in wine cellars, specialised premises or vineyards -3 to 7 wines are sampled with adequate food. -Samplings were guided, with an added educational aspect.

Source: author's research

As regards wine sampling, the wineries of Sremski Karlovci follow global trends and it can be said that the visitor actually enjoys both the taste of wine and the story of the host. Further improvement of locations where sampling takes place, training of host staff and development of the story that follows the sampling process is necessary, as only continuous advancement can help maintain the market position.

Table 9. Benchmark analysis of restaurants and gastronomic offer

Sremski Karlovci wineries	Villány wineries	Ontario wineries
-Only one winery owns a restaurant, while some wineries also offer food servings consisting of cold cuts, fresh vegetables and various kinds of cheese. Cooked meals are not on the menu.	-Almost every winery offers cold servings and/or warm meals. -Sporadically – different thematic gastronomic evenings, with an accent on local wines and specialties. -Cooperation of local wineries and restaurants offering local wines.	-In Canada, there is a generally growing interest in gastronomy and culinary arts (Thach, 2007). Ontario wineries follow this trend and offer a wide range of gastro-thematic evenings with adequate wines.

Source: author's research

Restaurants and gastronomic delights, such as restaurants opened within wineries or tighter connections between restaurants and wineries would have very positive effects on the development of offer and winery business in Karlovci, as well as on the development of wine tourism. Further development of assortment and distribution of Karlovci wineries should go in that direction.

Table 10. Benchmark analysis of possibilities of internet sale

Sremski Karlovci wineries	Villány wineries	Ontario wineries
-A small number of wineries offers the possibility of ordering and paying through the internet. -The website of www.vinozanas.rs offers the possibility of online wine ordering from the four wineries of Sremski Karlovci.	-Some wineries offer the possibility of online order and payment exclusively for the Hungarian market. Wineries cooperate with a great number of specialised shops for wine sale and distribution. -Hungarian Wine House website (www.hungarianwinehouse.co.uk) offers the possibility of UK and optional EU order.	-Order and selling via internet is commonly practiced. -There are specialised shops owned by the vineries themselves in several different cities and countries around the world.

Source: author's research

Internet sale of Karlovci wines is only taking its baby steps. Taking into account the necessary technology, time and investments, one of the alternatives can lie in an accelerated development of the website of www.vinozanas.rs, which should include in its offer the wines of other wineries, in addition to expanding its chain of distribution.

Table 11. Benchmark analysis of websites

Sremski Karlovci wineries	Villány wineries	Ontario wineries
-A large number of vineries in Sremski Karlovci have no websites, which contributes to them not being recognised on the market. -The existing websites of wineries are multilingual and give correct and adequate information.	-The greatest number of wineries has websites most commonly with information in Hungarian language, which narrows down the market of potential visitors and website users. -All wineries and their offer have basic presentations on a multilingual website of the Villány Siklós wine road (www.villanyiborvidek.hu).	-Each winery has a website of its own. -Websites are mostly multilingual, updated and offer a wealth of information about wineries, wines and upcoming wine events, but also information regarding accommodation, transport and other important tourist info. -All wineries are systematically presented on the website of the Wine Country Ontario Association (www.winecountryontario.ca).

Source: author's research

The prerequisite for modern business and market competitiveness is e-business in all of its forms. Quality websites of Karlovci wineries should be indispensable if those wineries are willing to take a more favourable position on the wine tourism market.

Benchmark analysis gave very important information on the areas where there is potential for further development and diversification of assortment of Sremski Karlovci wineries.

Conclusion

Having potential is a necessary, but not a sufficient condition of success and market survival. Quality wines, nice vineyards, The Danube, Fruška Gora and Sremski Karlovci, as a cultural and historical monument are touristically attractive, but wine tourism market demands more than that. The road to a successful integration of winemaking of Sremski Karlovci requires a strong synergic connection in the form of creation of more diverse, creative and interactive packages of products and wine tourism services. Sremski Karlovci wine tourism offer should be built through diversification of offer of wineries into other segments of economic activities. A large number of potential fields of diversification are still unrecognised and unused. The future development of wineries in Sremski Karlovci should be based on targeting these fields with the aim of creating a quality integral tourist product that could be integrated into regional wine tourist offer, together with other wine tourism regions. Such regional integration would also require globalisation of tourist offer, with local tourist values offered on a higher - global level.

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RAZVOJ VINSKOG TURIZMA SREMSKIH KARLOVACA I INTEGRACIJA U REGIONALNU TURISTIČKU PONUDU

Iva Škrbić[5], Vaso Jegdić[6], Srđan Milošević[7], Dragica Tomka[8]

Rezime

Procesi globalizacije i integracije su neminovni u svim privrednim oblastima, pa i u turizmu. Potencijalni uspeh vinskog turizma u Sremskim Karlovcima treba da se bazira na diverzifikaciji proizvoda koja podrazumeva upliv turizma i vinarstva u druge privredne oblasti. Prilikom kreiranja ponude vinskog turizma dobro je konsultovati iskustva razvijenih vinskih regija i koristiti njihove modele, što *je u ovom radu i učinjeno putem benčmark analize ponude vinarija Sremskih Karlovaca sa vinarijama okruga Ontarijo (Kanada) i mesta Viljanji (Mađarska). Cilj ovog rada je utvrditi moguće pravce razvoja integralnog proizvoda vinskog turizma Sremskih Karlovaca kao preduslova integracije u regionalnu turističku ponudu. Istraživanje ukazuje da vinsko-turistička ponuda Sremskih Karlovaca nije dovoljno razvijena. Veliki broj oblasti diverzifikacije proizvoda je neprepoznat. Budući razvoj vinarija u Sremskim Karlovcima se treba bazirati na osvajanju upravo tih područija. Tako kreiran turistički proizvod mogao bi lakše biti integrisan u regionalnu vinsku turističku ponudu.*

Ključne reči*: vinski turizam, integracija, diverzifikacija, turistički proizvod.*

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THE STATE AND PROBLEMS OF SERBIAN AGRICULTURE

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Summary

Modern agriculture includes the process of building a new economic activity based on efficiency, competitiveness, intensity and marketability. The process of transition of Serbian agriculture to market conditions is long and difficult. In this study the authors identify the most important problems of this process: unfavourable ownership structure and low productivity, the ineffectiveness of the agrarian and economic policy, the slow development of support institutions and legislative framework, and unsuccessful privatization in agriculture. We are dealing with a number of chronic problems that seriously threaten the development of agriculture and hinder the implementation of transition reforms. The authors propose measures and activities for achieving a transition shift in this strategically important economic branch for Serbia.

Key words: *agriculture, ownership structure, agricultural policy, privatization, Republic of Serbia.*

JEL: *Q13, Q18*

Introduction

Agriculture is the most important economic activity in the Republic of Serbia, which engages over a third of the working population, generates nearly 40% of the gross added value and makes up 23% of the overall Serbian export. It is only sector in the Serbian economy with a positive foreign trade balance (Maslac, 2013). During 2013, Serbia has created the highest surplus with the achieved value of 927.1 million EUR (Ministry of Agriculture, Forestry and Water Management, MAFWM, 2014). However, the contribution of agriculture to the overall economic development of Serbia is significantly limited by the many problems that it faces. An entire array of problems incurred as a result of restrictions in the period of central planning, difficulties in terms of development over the past twenty years, and the problems related to adapting to the market economy.

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Modern agriculture is the process of building new economic activities based on efficiency, competitiveness, intensity and marketability. The process of transition of Serbian agriculture to market conditions has been long and difficult. The transition of agriculture in the Republic of Serbia is over and includes two phases: the first phase that took place during the 1990s, and the second phase that began after the year 2000. The actual effects of both phases are unfavourable. In this paper, we analysed the effects of the second phase, as well as the key issues that contributed to the failure of the transitional reforms in this area. Only by taking into consideration the mistakes from the past can police that are likely to be effective in the future be made.

Research goal, methodology and date sources

A detailed analysis of the development problems of Serbian agriculture will contribute to a better understanding of their causes and the acceptance of appropriate measures and actions needed to address them, which is the main goal of the current research. In realizing such a research goal, we started from the following hypotheses: (1) Serbia possesses a significant natural potential for a more effective development of agricultural production; and (2) the three main problems in the second phase of agricultural transition are the ineffective agricultural and economic policies, the unfavourable structure of ownership, and the unsuccessful privatization. In order to prove the aforementioned hypothesis, the methods used included a descriptive analysis and a comparison. A descriptive analysis was use to gain insight into the relations and regularities in Serbian agriculture. At the same time, the agricultural sector is studied in a broader context which incorporates both the economy and society. A comparison is made between Serbia and other European countries, in order for us to identify any similarities and differences in the investigated phenomena, which could be important for the development of agriculture.

As a starting point for making judgments about the goal of this research, data from official statistical reports, source documents, and information obtained from relevant national and foreign sources were used. In addition, local authors who deal with these issues were also consulted.

Research results and discussion

Indicators of production and the state of agriculture

The Republic of Serbia has great potential in the sector of agricultural production due to favourable climatic conditions, good natural soil characteristics and available water resources, but this potential is not fully utilized. It is recognized as an economic sector that can produce more value than it does now and contribute to the overall economic development of the country in all municipal and regional strategies, and is defined as one of the main strategic direction of development (MAFWM, 2012, p. 4).

Table 1. Capacities of Agricultural Production in the Republic of Serbia (in 000)

Indicator	2006	2007	2008	2009	2010	2011	2012
Agricultural area(ha)	5.105	5.092	5.093	5.097	5.092	5.096	5.092
Cultivable area(ha)	4.228	4.218	4.222	4.226	4.216	4.211	4.215
Arable fields and gardens (ha)	3.318	3.299	3.303	3.301	3.295	3.294	3.282
Orchards (ha)	238	240	241	241	240	240	238
Vineyards (ha)	62	59	58	58	57	56	54
Meadows(ha)	610	620	620	626	624	621	641
Pastures(ha)	838	835	833	834	836	845	837
Pools, reed tracts and fishponds (ha)	39	39	38	39	40	40	40
Number of livestock units	1.632	1.574	1.551	1.516	1.452	1.422	1.437
Economically active population in agricultural (Share in total economically active population, %)	15,3%	14,7%	14,0%	13,4%	12,8%	12,3%	11,7%

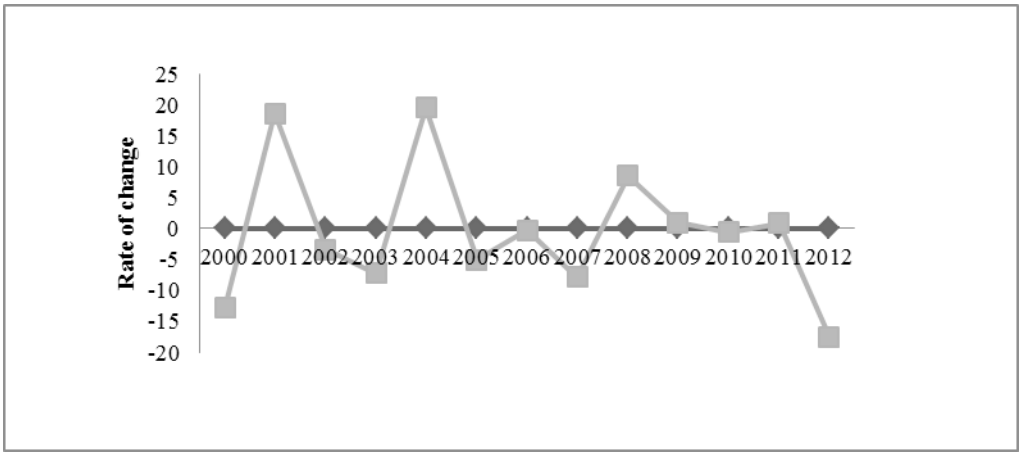
Source: based on data from Food and Agriculture Organization Corporate Statistical Database (FAOSTAT) for certain years, and Statistical Office of the Republic of Serbia (2010, 2013, 2013a).

Note: Cultivable area consists of arable fields and gardens, orchards, vineyards and meadows.

Based on the data presented in Table 1, it is possible to conclude that Serbia has a comparative advantage in agriculture because it has agricultural and cultivable land as well as a considerable number of livestock units. The overall utilized agricultural area in Serbia is 5.092.000 hectares (ha), which is 57,6% of its territory. Of those, 4.215.000 ha or as much as 82,8% is cultivable area, which is above the European standards. Arable fields and gardens make up 64,5% of the overall agriculture area, pastures 16,4%, meadows 12,6%, orchards 4,7%, vineyards 1,1% and pools, tracts and fishponds make up 0,8%. The number of livestock units per hectare of agricultural land, indicate the degree of a country's agricultural development (Petrović, 2005; Petrović et al., 2011). Serbia has about 1.437.000 livestock units or 28,2 per 100 ha of agricultural land. A more convincing indicator is the share of economically active agricultural population in the overall economically active population, which, with its 11.7%, classifies Serbia as one of the leading European countries in this respect.

However, Serbia apparently does not exploit all of the natural wealth that it possesses to the fullest capacity. The best evidence of this includes the frequent fluctuations in the movement of agricultural production. For example, in the period from 2000 to 2012, the physical volume of agricultural production increased only during five (2001, 2004, 2008, 2009, 2011, see in Graph 1) of the thirteen years. The growth rate of agricultural production is unstable and mostly negative. There is a set of problems that affect Serbian agriculture, and which lead to significantly slower growth in production, as compared to the available resources. This paper analyses some of these major problems.

Graph 1. Trends in Agricultural Production, the Republic of Serbia (2000-2012)



Source: authors' own design based on data from the Statistical Office of the Republic of Serbia (2010, 2013).

Unfavourable Ownership Structure and Low Productivity

Serbian agriculture is traditionally characterized by an unfavourable ownership structure, which is very typical for family holdings, as well as the predominant ones, dominant influence its overall development. The development of these holdings has long been hampered by various measures of agricultural policy, including limiting the size of land property whose size changed until its abolition (the measure was finally abolished in 1992). However, the ownership structure of Serbian agriculture still continues to be dominated by petty commodity production on small holdings. The transition has not managed to solve this problem.

Table 2. Ownership structure of agricultural holdings

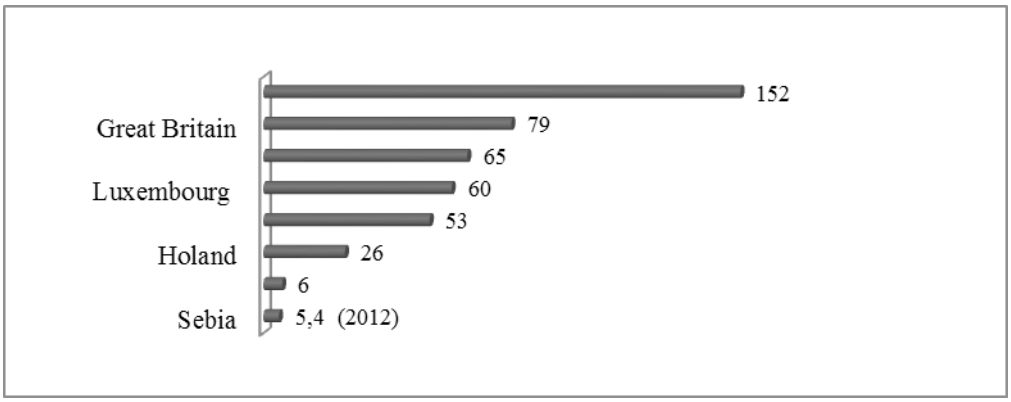
Agricultural area (ha)	Serbia (2012)	Luxembourg (2010)	Netherlands (2010)	Denmark (2010)	France (2010)	Great Britain (2010)
0-5	77,7%	17,2%	29,2%	4,8%	27,0%	16,0%
5-10	14,1%	10,0%	13,9%	19,6%	26,9%	13,3%
10+	8,2%	72,8%	43,1%	75,6%	46,1%	70,7%

Source: authors' own calculations based on data from European statistics (EUROSTAT, 2011) and Statistical Office of the Republic of Serbia (2013b).

The data in Table 2 clearly show that small agricultural holdings prevail in Serbia. Specifically, 77,7% of the agricultural holdings own property of less than 5 ha, while only 8,2% own property greater than/equal to 10 ha. The situation is even worse if we take into account that approximately 58% of private land covers an area smaller than 3 ha. In contrast, in Denmark, only 4.8% of agricultural holdings own property less than 5 ha in size and many as 75.6% own property greater than/equal to 10 ha. In Graph 2, a comparative graphical representation of the average size of the holdings in Serbia and certain European

countries is shown.

Graph 2. Average area per holding (in ha), (2010)



Source: authors' figure based on data from EUROSTAT (2011) and the Statistical Office of the Republic of Serbia (2013b).

The average area per holding in Serbia is about 5,4 ha but, for example, in Denmark it is 65 ha, and 152 ha in the Czech Republic. The experience of developed European agriculture shows that only large holdings provide quality production and profit. Large property has greater possibilities for improving production technology, integrated and biological protection of crops and products, more rational and efficient use of machinery, efficient irrigation, the gathering together and collaboration of the best research and professional personnel. Unfavourable ownership structure causes, in many ways, low labour productivity in agriculture. Zekić and Popović (2010) suggest that the land and labour productivity[3] in Serbia were significantly lower than in the EU countries.

In our conditions, within the fragmented ownership structure, three groups of problems appear (Pejanović, Tica, 2005):

- Modern technology and machinery cannot adequately and rationally be used on small holdings, nor can technological progress be achieved, which is the backbone of modern agricultural economy;
- Income in small production cannot follow the trend of income at the national level, which results in the abandonment of rural areas and agriculture, and the depopulation of villages;
- The low productivity of small production contributes to the rising prices of agricultural products, and it is difficult to keep up with the competition from developed countries.

In other words, our farms are so fragmented and weakened, as well as unprofessional, that it leads us to the question of whether there is any possibility of higher, economically more rational, production. Given the Serbian aspirations to join the European Union (EU), more

3 Labor productivity measured by the volume of agricultural production per active farmer.

profound changes in land policy are needed. Without a concentration of small holdings and the creation of large agricultural areas, Serbia does not have much chance for success in the Common Agricultural Policy (CAP) of the EU.

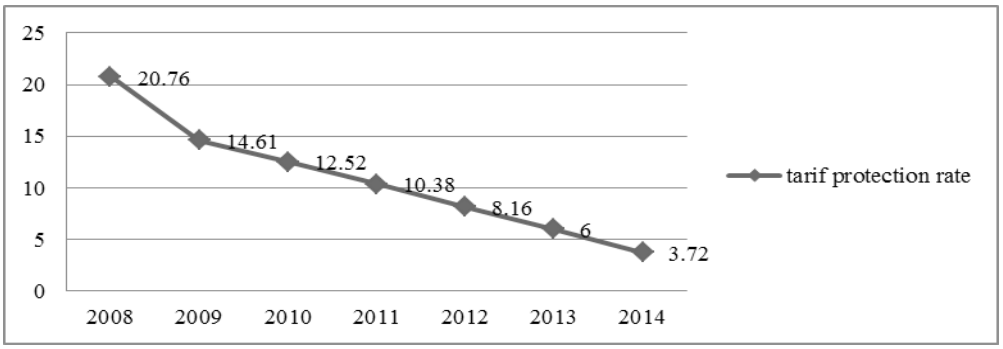
The Inefficiency of the Agricultural and Economic Policy

Former Serbian agricultural policy is flawed and inadequate. Its basic features of the past decade are: instability, inconsistency, minimal protection of the domestic market and the lack of financial support that is not tied to the structural adjustments.

The instability and inconsistency of the agricultural policy is easily noticeable when we consider the changes made in the past decade, which can be divided into four phases. In the first phase (2001-2003), agricultural policy was oriented towards measures of price support for certain cultures (soybean, sunflower, sugar beet and wheat) in the absence of other measures. In the second phase (2004-2006), the price support measures were repealed and go to support investment and rural development. The third phase (2007-2011) was characterized by incentive payments per cultivated area and livestock unit. The fourth phase (2012- the present) is a transition from the subsidies per hectare to subsidies per agricultural product in terms of quantity, which is not in accordance with the existing and future CAP. The lack of consistency in the design and implementation of agricultural policy in the past has resulted in a reduction of investment in agriculture and non-market spill over profit among participants in the market chain. Therefore, the adoption of the National Program for Agriculture is an important step towards the improvement of agricultural policy, as it will contribute to its predictability and create the basis for short and medium term production planning (MAFWM, 2012).

Agro-interventionism is a fact of modern society, despite some attempts to prove the existence of full economic liberalism (Garmann, 2014; Marković, Marković, 2014). "In practice, on the contrary, no country wants to rely entirely on the spontaneous development of agriculture and the free and uncontrolled import of food, but tries to use a system of protection and intervention to achieve its development goals and ensure maximum food assurance" (Pejanović, Tica, 2005, p. 92). However, in Serbia, the prices of agricultural and food products were completely liberalized ten years ago (Figure 3), and there are no protective prices for even basic agricultural and food products. According to Ševarlić (2011), subsidies vary based destination, amount and users. They are approved in the same amount for all classes of soil, favouring the lowlands. Although there have been attempts to reduce subsidies for the bigger registered holdings, first with the limit that only 10 ha will be subsidized, they are still retained up to 100 ha. In addition, there are also regional disparities between subsidies per ha, as the Autonomous Province of Vojvodina is the biggest recipient of subsidies with 76%, in comparison with Central Serbia which is given only 24% of the total subsidies. When it comes to levies and tariffs, they ensure a seasonal effect for some products as well as weak protection from imports at dumping prices. With the Interim Trade Agreement between Serbia and the EU, which has been applied to agricultural products since 2009, the protection of the national market has been reduced to a minimum.

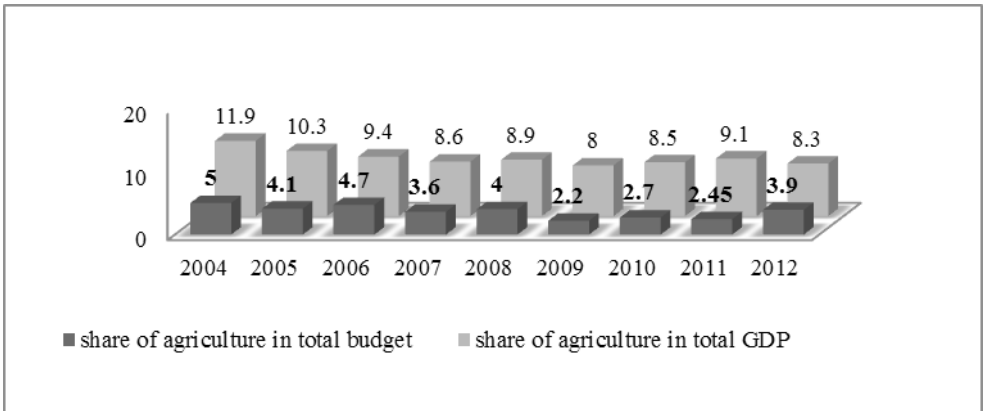
Graph 3. The liberalizing of tariffs for agro-food products in Serbia



Source: Bugarin (2012).

One of the biggest problems facing Serbian agriculture is the modest agricultural budget. Paradoxically, over the past three years, the state has earmarked the least amount of money for the area where we find the largest increase in production and exports. Agricultural economics is, therefore, suffering extensive loss, because the manufacturers will not, in the long run, be able to compete with their competitors in a region which receive significantly larger subsides. In Figure 4, a downward trend in the relative share of agricultural in the overall budget of the Republic of Serbia, with a sharp decline in participation from 2009-2011, can be seen. In contrast, the contribution of agriculture towards the Gross Domestic Product (GDP) is significantly higher.

Graph 4. The share of agricultural in the overall budget of the Republic of Serbia (2004-2012)



Source: authors' own figure based on data from Ministry of Finance and Economy – Law of budget for certain years and the Statistical Office of the Republic of Serbia (2009, 2011, 2012, 2013c).

Along with inadequate agricultural policy, the slow development of institutions and legislative support further hinders the implementation of transition reforms. The Directorate for Commodity Reserves, advisory services and water management organizations that still operate as state-owned enterprises, the lack of implementation of the reform of scientific

institutions which offer support to our agricultural department are just some of the unfinished projects involved in establishing an institutional framework for the development of agriculture. Cooperatives associations, chambers of commerce and professional organizations are not, although they should be, the leaders of the development of agriculture, because they are incapable of conducting their own internal reforms. The agricultural legislation has yet not been completed, and it is difficult to apply as well. Although in the year of 2009, 15 Agriculture Acts were issued, it appears that this set of laws was hastily passed in order to comply with the formal requirements of the EU. Problems are expected in the implementation. In addition, there is a lack of other important laws such as the Law on Cooperatives.

The unsuccessful privatization process in agriculture

Implementation of the privatization process did not work as expected and desired. A long process of demarcation between the state and socially-owned land, property and legal issues of ownership, obstructions on the part of those who do not want the privatization to succeed, the long process of preparation for privatization, frequent revisions and reviews of some of the privatization processes which had already been carried out significantly slowed down this process. "The basic principles of privatization are insufficiently respected, especially the principle of transparency which has caused great damage to many prominent agricultural companies" (Pejanović, Tica, 2004, p. 9).

Until 2011, 153 agricultural enterprises, farms and agricultural combines were sold for about 280 million euros (at auction or by tender). Of these, 38 privatization agreements were terminated (Agrobiznis, 2011). The privatization of agricultural enterprises in Serbia was premature because of no appropriate laws, which led to the collapse of large agricultural conglomerates. During privatization, with the help of the amended Law on Agricultural Land, large agricultural conglomerates were broken down, as organizational and technological complexes, since it was socially-owned land that was undergoing the privatization process, while the state-owned land remained in state ownership to be used free of charge by a buyer (Djekić, Vučić, 2002). It was only after the year 2006 that it was put up for auction or leased. The co-operative sector is completely excluded from the process of transitional reforms, since due to the untimely legislation, it was mostly subject to takeovers in bankruptcy. In the companies that have been privatized, about 65,000 people have lost their jobs, which puts agriculture in the infamous second place, following the textile industry, in terms of the number of workers who lost their jobs in the transition process. It is clear that this situation would not have happened if the principle that guarantees the free enterprise and the rights of the employees had been adhered to.

So far, the process of privatization in agriculture has resulted in low levels of foreign investments. The net inflow of foreign direct investments (FDI) in the agricultural sector of Serbia is extremely modest. Unlike the other sectors of the economy, agriculture is not attractive for FDI activity, considering that in the structure of FDI in Serbia, agriculture participated with 0.4% in 2011, and 0.3% in 2012 (Table 3).

Table 3. FDI in Agriculture of the Republic of Serbia (2004-2012)

Indicator	2004	2005	2006	2007	2008	2009	2010	2011	2012
FDI (in 000 USD)	9.449	11.578	11.345	20.970	57.908	29.288	14.556	13.657	1.030
Share in total investments	1,0%	0,7%	0,2%	0,5%	1,6%	1,2%	1,0%	0,4%	0,3%

Source: Jovović et al., 2014.

Conclusion and recommendations

During the transition process in the Republic of Serbia, no significant changes in the economic structure actually took place. Since the beginning of the 21st century, the greatest contribution of agriculture to the gross domestic product is still high, despite the GDP decrease. Agriculture has a high stake in all of the macro-economic aggregates of the Republic of Serbia. This can be ascribed to rich natural resources on the one hand, and the slower process of structural reform of the other economy sectors on the other. Based on the extent and structure of the available agricultural land, Serbia is one of the countries with favourable land resources, which is the result of a great heterogeneity of the geological structure, climate, vegetation and micro fauna. Even though over the last few decades the process of vacating rural areas has intensified, the agricultural population still makes up a significant portion of the overall national population. The only problem in terms of agricultural labour is the unfavourable age and education structure.

The ownership structure of the agricultural households is characterized by the dominance of small-size agricultural households. In comparison to the neighbouring countries, in Serbia, agricultural households which do not exceed 5 ha are predominant. In addition to the fragmentation of the plots of land, the other obstacles to a more efficient use of the land potential include the lack of infrastructure, the lack of proper credit, social insecurity that the property owners are subject to and the incomplete restitution process. One of the consequences of this unfavourable agricultural structure is primarily the outdated machinery and equipment that is available to the homeowners, which contributes to the increase of the production expenses.

The previous decade was marked by significant annual fluctuations of the volume of agricultural production. The main reason for this is the inadequate agricultural and economic policy, even though we need to mention the cyclical occurrences of extreme weather, as well as the negative effects of the world economic crisis. The unstable agricultural policy is characterized by sharp turns in policy and incentive mechanisms. The first radical turn referred to the distancing from the agricultural interventionism, which led to the minimal protection of the national market. The liberalization of the customs tariffs and ineffective subsidy policy led to a decrease in the competitiveness of local agricultural production and increased the dissolution in the small agricultural households. The greatest weakness of the agricultural and economic policy is certainly the insufficient financial support given to

agriculture, considering the fact that for a long period of time the agricultural budget has not exceeded 5% of the overall budget size. Such an agricultural policy has been accompanied by institutional changes which in this sector took place very slowly, and without any continuity. What also added to the performance of the transitional reforms was the unsuccessful process of privatization, which resulted in the dissolution of large agricultural combines and the low level of foreign investment.

Starting with the aforementioned problems in agriculture, it is possible to provide several recommendations for strengthening the agricultural sectors and the development of an agriculture which is focused on export. First, the state should change its agricultural policy and ensure better utilization of resources in agricultural and food production. It is necessary to make domestic agricultural policy measures compatible with EU measures in order to avoid harmful consequences caused by the subsequent obligations of EU membership. This means creating measures that are compatible with those existing in the EU, while anticipating the future of the CAP measures. In addition, we need institutional reforms which would revive the existing and build the missing parts of our institutional structures, and enable an effective application of defence policies. In this case, the doubling of agricultural production and exports would be quick to follow.

One of the priorities of the new agricultural policy should be directed toward the consolidation of property. This goal also cannot be achieved without a comprehensive national program and adhering to its implementation. It, first of all, refers to the arrangement of the cadastre and commutation of cultivable areas at the expense of the state. The establishment of stimulus funds for purchasing land from elderly and non-agricultural households and their consolidation is one of the possible options, as well as insisting on amending the Law on inheritance; therefore, priority in acquiring land should be given to those who work and live from it.

Economic policy should support the implementation of agricultural policy, primarily by increasing the agricultural budget in order to stop the negative trends and to revive agriculture and villages. Also, there is a necessity for a selective approach to budget spending, with clearly defined investment criteria in well-designed and profitable projects, such as irrigation, new techniques and technology, education, research and development, and the like. As a part of foreign trade policy, it is very important to reduce customs to a reasonable level.

At the micro level, it is necessary to restructure the agro-economy units and make them more competitive. A very professional and high quality privatization management process must be provided, as well as complete transparency of work and continuous parliamentary control of the institutions that implement it, in order to avoid dubious privatization processes. Lastly, a creation of a long-term and stable agricultural investment climate is crucial in order to attain a higher inflow of FDI in Serbian agriculture, which is considered to be the responsibility of the state and its institutions.

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STANJE I PROBLEMI POLJOPRIVREDE SRBIJE

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Rezime

Moderna poljoprivreda podrazumeva proces izgradnje nove privredne delatnosti zasnovane na efikasnosti, konkurentnosti, intenzivnosti i tržišnosti. Proces prelaska poljoprivrede Srbije na tržišne uslove poslovanja je dug i otežan. U radu autori identifikuju najznačajnije problem ovog procesa: nepovoljna posedovna struktura i niska produktivnost, neefikasna agrarna i ekonomska politika, spor razvoj institucija podrške i zakonodavnog okvira i neuspešna privatizacija i restruktuiranje poljoprivrednih preduzeća i kombinata. Reč je o nizu hroničnih problema koji ozbiljno ugrožavaju razvoj poljoprivrede i otežavaju sprovođenje tranzicionih reformi. Pored toga, autori daju predlog mera i akcija za ostvarivanje tranzicionog zaokreta u ovoj, za Srbiju strateški važnoj privrednoj grani.

Ključne reči: *poljoprivreda, posedovna struktura, agrarna politika, privatizacija, Republika Srbija.*

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COMPLEMENTARITY IN THE DEVELOPMENT OF RURAL TOURISM WITH THE DEVELOPMENT OF THERMAL BATHS, SPA AND WELNESS TOURISM [1]

Predrag Vuković[2], Gordana Čavlin[3], Miroslav Čavlin[4]

Summary

Serbia has a long tradition in thermal baths tourism development. In the second half of the twentieth century, this branch of tourism attracted a significant segment of tourist demand, both domestic and foreign. However, due to difficult business conditions in the nineties, its infrastructure became outdated. This resulted in negative trends in tourism development and a negative image appeared in the tourism market.

On the other hand, rural tourism is a relatively new form of tourism. In Serbia, it started developing from the 1970ies. A significant interim in this form of tourism was also noticed during the nineties. Today, these two forms of tourism are emphasized as the development chance of Serbian tourism and economy in diverse development-strategic documents by the Government and the departmental ministry.

The conceptual approach to these forms of tourism is used in this work, in order to scope the possibilities of their complementary development. What is primarily borne in mind is the resource basis that Serbia possesses for their development, but also the newer tendencies and trends on the tourism market. Expectations are that a synergic cooperation of these forms of tourism would ensure better results, and Serbia would position itself higher on the international tourism market.

Key words: *rural tourism, tourist destination, thermal baths, spa, wellness.*

JEL: *Q1, Q26, O13*

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Introduction

The modern trends in the tourism market move further from the concept of mass tourism offered by vacations in destinations located on the seashore and/or mountain ski resorts. There is striving towards activating all segments of tourist demand in order to achieve the best results in tourism development. In this way the countries, i.e. destinations that do not possess the resource bases for developing the so-called "mass tourism" seek their chance on the tourism market by offering alternative tourism products.

Literature usually names two tourism concepts – the so-called "*new*" and "*old*". *Old tourism* is characterized as mass, standardized, rigidly packed with respect for the consumers, management, technology, production, and production resources. On the other hand, the concept of *new tourism* is said to be characterized by flexibility, segmentation, integration, and attentiveness to the surroundings and the tourist as the consumer. This *new approach* changes the rules of the game, evoking new strategies in order to ensure market success. Innovation is especially insisted on, as the base for gaining competitive advantage (Poon, 2003; Vanhove, 2005; Porter, 2008).

This is precisely where Serbia's key to success on the tourism market lies. Great resource bases significant for the development of thermal baths, wellness and spa tourism on one hand, as well as rural tourism on the other, create the possibility of their interaction and forming an integrated tourism product that could be made into a brand, and as such, be positioned on the tourism market. In this way, Serbia could create a completely new tourism image, and reposition itself on the market as a tourist destination.

The concept of rural tourism and the dimensions of its development in Serbia

The first accounts of people massively visiting rural areas for vacation date from the 19th century (Lane, 1994; Feifer, 1985, Runte, 1990). This cannot, however, be considered as the beginnings of rural tourism, because people have visited rural areas for vacation, rest, and recreation even earlier. Numerous vacation facilities used by the privileged social classes bear witness to this. The number of these facilities is the highest in Great Britain, Germany, Austria, Switzerland, Russia, etc. (Vuković et al., 2010).

The OECD gave the basic characteristic of rural tourism in the document *Tourism Strategies and Rural Development* (OECD, 1994):

1. It is located in a rural area.
2. It is functionally rural – built in a world of special rural characteristics with small businesses, open space, it is in contact with nature, cultural heritage and traditional practice.
3. There is "rurality" in the form – both in the sense of the number of facilities, as well as the settlements and it must therefore be of small proportions.
4. It has a traditional character, slow growing, organic, connected to local families.
5. It is made of different forms of tourism, which represent a complex scheme of a rural environment, economy, history and location.

The same document emphasizes the factors one must consider when determining rural tourism (type of vacation, intensity of vacation use, location, management, style, degree of integration with the community), (OECD, 1994).

The UN FAO (Scialabba, Williamson, 2004) differentiates between the following forms of tourism that take place in rural areas: *ecotourism, agro tourism, agro-ecotourism* and *eco-organic tourism*.

Ecotourism is about activities that support the preservation and quality improvement of life resource. *Agro tourism* is a symbiotic interaction between tourism and agriculture. It is a key element to ecological and socially responsible tourism in rural areas. Agro tourism can take on several forms: vacation on farms, vacation in farm households, camping on farms, vacation in mountain resorts, vacation in centres for horse sports and other accommodation forms in a rural area. *Agro-ecotourism* is a combination of ecotourism and agro tourism. Rural areas usually represent a combination of "the wild" and the agro-ecosystem. Diverse landscape, with semi-natural habitats has a larger aesthetic and recreational potential than the uniform, degraded and/or polluted agricultural area. When agro-ecotourism develops around an organic farm, it is called *eco-organic tourism*.

Besides these, literature also states other definitions of rural tourism. The EuroGites (http://www.eurogites.org) organization, where Serbia is an active member, has also given significant contribution to theoretic development of rural tourism.

The document *Development Strategy of Tourism in The Republic of Serbia* (Ministry of Trade, Tourism and Service of The Republic of Serbia, 2005) defines rural tourism as a set of activities, services, and additional content organized by the rural population on family households in order to attract tourists and create additional income, while respecting the principles of sustainable development and preserving natural resources.

Until the year 2011, there were no reliable indicators of rural tourism development in Serbia. That is when *The Master Plan of Sustainable Development of Rural Tourism* (2011) was made, which presented the results that 106 local tourist organizations made in cooperation. According to this source, rural tourism encompassed 2.7 million overnight stays, which is the sum of individual overnight stays in rural tourism (145,354)[5] and the number of common tourist overnight stays usable for rural tourism (2,556,128)[6]. Rural tourism provides more than 32,000 beds (registered and unregistered), where more than 10,000 beds are in the countryside. The total number of beds is estimated to bring more than 5 billion RSD annually in income and 5 bn. RSD in direct income to the tourism

5 This data comes from the municipalities and LTOs. As pointed out in this document, "*no central institution is in charge of gathering this data, except the Council of each municipality or the LTO*", p.15.

6 The Master Plan states: "*the common tourist overnight stays usable for rural tourism*" mean accommodation in rural areas that can be used by tourists who visit the rural areas, but cannot be called "*rural households*".

sector. The income of 10 bn. RSD does not include visitors who stay for a night or stay with their friends or family (although they also spend money on tourism and other services during their stay) and it does not include the indirect contribution to the local economy in the sense of income and employment. The income of 10 bn. RSD is 16% of direct GDP from travel and tourism, as calculated by the *World Council for Travel and Tourism in Serbia* for the year 2010, which is 64.2 bn. RSD[7]. Based on this, we can conclude that rural tourism today has an up-going trend in development.

The conceptual approach to thermal baths, spa, wellness, health and medical tourism

The basic attraction which animates the demand interested in this form of tourism, are the medicinal properties of natural recourses which a destination possesses (thermal and mineral waters, clean air, a healthy natural ambient, favourable climate conditions etc.), i.e. the possibility of using appropriate medical and health services that are within the tourist offer.

Thermal baths tourism

The term *thermal baths tourism* (or *hot springs tourism*) is the closest translation of the Serbian term *banjski turizam*, stemming from the Serbian *banja*. The *banja* are tourist destinations with favourable conditions for people suffering from various chronic and acute illnesses, as a rule including thermal baths, mineral waters, and mud (occasionally destinations with clean air for people who suffer from respiratory problems). The presence of licenced health care professionals is common, which puts the Serbian *banja* close to a medical spa in its nature. Hence, *banjski turizam*, or *thermal baths tourism*. However, with the expansion of the scope and the quality of service in these destinations, the original term *banjski turizam* was expanded to include *wellness* and *spa tourism*. In order to avoid this long and complicated term (*thermal bats, wellness, and spa tourism*), certain authors use a new term – *balneary tourism* (i.e. Ungureanu, Tešić, 2014).

The term of thermal baths tourism in this sense is narrower, as it focuses on treating the tourists only with water and its chemical and physical properties in order to improve the health state of the guests. However, this term cannot be universally accepted, because this conceptual approach excludes the visitors of the *clean air spas,* such as the mountain *Zlatibor*, often visited by people with problems with the thyroid gland and/or tourists who use *baths with medicinal mud*, found for example in the *Rusanda* spa in *Melenci*,[8] etc.

That is why it is necessary to have a partial approach to each of the tourism products in order to precisely define the possibilities for its development and complementary connection to rural and other forms of tourism.

7 Op. cit. pp. 74-75.

8 http://www.banjarusanda.rs/o-nama

Literature uses different definitions of spas. They can be divided into two approaches – the wide and the narrow approach. Langviniene and Sekliuckiene (2009) do not only focus on the medical treatment of guests, but also have a wider approach and indicate the significance of a complete tourist experience during the stay. They emphasize the influence that all pension and out-of-pension content has on the health state and the satisfaction of the visitor.

Langviniene and Sekliuckiene based their stand on several studies that looked into the demand for *extra services* that are important to tourists when choosing a spa destination (Bennett et al., 2004; Church and Robertson, 1999). These values for thermal baths, spa and wellness tourists are: 1) the improvement of health, 2) rest and 3) spending time outside of the accommodation.

In a narrower approach to defining spas as tourist destinations, the ISPA (*International Spa Association*)[9] defines them in the year of 2011 as places dedicated to promoting the quality of life through different forms of professional services that improve the renewal of the mind, body and spirit.

Spa tourism

The word spa comes from the Latin expression *Sanitas Per Aquam* (*health through water*). Literature in English does not differentiate between thermal baths and spa tourism, as literature in Serbian does. However, the concept of spa tourism in itself is narrower than the classical idea of (thermal) baths tourism. It is about treating the tourists exclusively with water in order to improve their health, i.e. psychosomatic state (Crebbin-Bailey et al., 2004).

Wellness tourism

The first name for destinations including contents connected to bathing after which their guests felt themselves better are the *thermae* (Latin for *baths*). This term, that was dominant for centuries, has now been replaced with the term *wellness*. The basic idea is that people do not have to use water treatments only when they are sick, but that the goal of their water treatment is the improvement of one's overall health, i.e. psychosomatic state.

Erfurt-Cooper and Cooper (2009) differentiate between health, wellness tourism with and without hot springs. They state the reasons for these treatments: disease prevention, health awareness, thermal balneology, recovery from illness, relaxation and recreation, life style.

The International Spa Association has defined seven kinds of spa/wellness capacities (Table 1).

9 http://www.experienceispa.com/

Table 1. Seven kinds of spa/wellness capacities

Club Spa	The primary use is fitness, but it also offers a wide array of professionally led spa services on a daily basis.
Cruise ship Spa	A spa centre on a cruise ship that offers professionally led spa services, fitness services and wellness components, as well as a spa menu with carefully chosen meals.
Day Spa	A spa centre that offers professional spa services on a daily basis. This kind of spa is best developed in western Europe.
Destination Spa	A spa that gives its clients the possibility of choice, in connection with improving life style and improving health through professional spa services, fitness, educational programmes and accommodation within the centre. A spa menu is found in the special offer.
Medical Spa	Its primary role is giving a complete health and wellness service in surroundings that integrate spa services with conventional and special treatments and therapies. This category is predicted to have the greatest growth in the next ten years because of the increasing demand for holistic medical treatments and therapies.
Mineral Springs Spa	A spa that offers natural minerals, thermal or other springs used for hydrotherapeutic treatments. This kind of a spa centre is the most typical of the European spa/wellness sector.
Resort /hotel Spa	A spa within a hotel or a resort that gives professional spa services, fitness and wellness components with a spa menu. It is the second in size of all seven categories, due to the fact that the hotel industry has accepted it as a standard in order to increase profitability, but also because of the increased interest of guests in this type of offer.

Source: The Tourism Development Strategy of Serbia – The First Phase Report (2005), Ministry of Trade, Tourism and Services, Faculty of Economy - University of Belgrade, Horwath Consulting Zagreb.

Medical and health tourism

The OECD (Lunt et al., 2010) differentiates between medical and health tourism. *Medical tourism* encompasses all those services that consumers use when traveling with the intention of getting some form of treatment. This treatment can contain a full or a partial scope of medical treatments. It is necessary to clearly define the boundary to what health includes, how it is medically treated and what kind of tourist services is included (aesthetic surgery can certainly not be included in the segment of medical tourism). *Health tourism* is a wider term. It includes organized travel outside of the place of residence for the purpose of improving or restoring an individual's health through various forms of medical service.

Dimensions in thermal baths tourism development in Serbia

According to data provided by the TOS (Tourism Organization of Serbia), health tourism, i.e. thermal baths tourism has the longest tradition. There are more than 1,000 hot and mineral springs in Serbia, rich natural mineral gas repositories, and medicinal mud. More than 53

thermal localities. Serbia also has more than 40 spas (baths) and destinations with favourable climate that provide services for the widest spectrum of illnesses. These are most often treatments including drinking medicinal mineral water, but also medicinal baths.

As of 2005, wellness tourism also started developing in Serbia. The first such destination was the Special Hospital *Merkur* in Vrnjačka Banja.[10] Shortly after, other baths centres opened their own wellness tourism offers (Koviljača, Soko Banja, Kanjiža, Prolom Banja, etc.).

The movement of the number of tourists and their overnight stays in the Republic of Serbia in the period of the years 2008-2013 is shown in Table 2.

Table 2. Tourists and overnight stays in baths in the period of years 2008-2013.

Year	Tourists			Overnight stays			The average number of tourist's overnight stays[1)]	
	Total	Domestic	Foreign	Total	Domestic	Foreign	Domestic	Foreign
2008	366,098	343,063	23,035	2,367,730	2,266,766	100,964	6.6	4.4
2009	358,481	334,155	24,326	2,286,661	2,189,568	97,093	6.6	4.0
2010	344,967	319,953	25,014	2,210,710	2,106,273	104,437	6.6	4.2
2011	375,473	341,585	33,888	2,308,435	2,176,622	131,813	6.4	3.9
2012	347,192	310,088	37,104	2,035,938	1,901,499	134,439	6.1	3.6

Source: Municipalities in Serbia, 2010, 2011, 2012, 2013, SORS, Belgrade.

Note: 1) Although the TOS states that Serbia has more than 40 baths, SORS only includes Aranđelovac, Bogutovačka Banja, Vranjska Banja, Vrnjačka Banja, Vrujci – Gornja Toplica, Gamzigradska Banja, Gornja Trepča, Koviljača, Lukovska Banja, Mataruška Banja, Niška Banja, Prolom Banja, Sijarinska Banja, Soko Banja.

The possibility of connecting the tourism offer of rural with thermal baths, spa, wellness, medical and health tourism

Cetinski and Weber (1996) have classified the offer based on the intensity of medical content appearance:

- *Complementary health contents*: These are contents that complement and improve, and can be part of some other tourism product. Except for the health aspect, they also represent an attractive foundation for the widest array of tourist demand.
- *Important health contents*: Recreational and healthy activities, i.e. products where certain health contents (treatments, massages, etc.) play an important role and are the object of interest for a smaller number of subjects of tourist demand.
- *Main health contents*: As their name states, they represent the main tourism product, i.e. the main motive for traveling to a certain destination.

10 Special Hospital *Merkur*, Vrnjačka Banja (www.vrnjcispa.com)

This classification is important since it gives the possibility to complementary connect the tourism product of rural tourism with some of these health contents in strategic planning.

In that context, the first of the stated products, the so-called complementary health contents, has the widest base of potential consumers, and therefore the biggest chance of tight connection with rural tourism. In other medicinal programmes, this volume is reduced, and so the possibility of complementary connection with rural tourism is reduced as well. In the third case of main health contents, this possibility is also the smallest.

The Tourism Development Strategy of Serbia (2005)[11] leaves the possibility of complementing health and wellness tourism with appropriate contents.

"With the main motives of coming to spa destinations, these guests also like to engage in activities in the open, such as golf, cycling and hiking, but they also like to get to know the historical and cultural heritage of the surroundings they visit. Sometimes, during their stay in the spa destination, they decide to go on a short field-trip in the surrounding area, with interest in local events and festivals..."

Having in mind the activities included in rural tourism and mentioned by a certain number of authors (Roberts and Hall, 2003; Lane, 1994; Thibal, 1988), and that are said to have the possibility of happening in a rural area, i.e. be part of the out-of-pension tourism offer of rural tourism, it is justified to conclude that an appropriate combination of rural tourism offer with health contents that can be included in the categories of complementary and important health contents, we can create an integrated tourism product of rural with health and wellness tourism.

Examples of this exist in the world, and the countries that have developed this type of connection the most, are the Nordic countries, Austria, Switzerland, Iceland and Canada.

The basic idea is that the tourists who are accommodated in rural households consume baths, spa, wellness, medical and health tourism services of the destination, as well as all other services in the offer of rural tourism.

Bearing in mind the unfortunately outdated and poor infrastructure of the Serbian baths and climatic destinations, as well as the potential for the development of rural tourism, it is justified to expect that minor investments in accommodation capacities and better technical and medical equipment of the health resources, we can increase the efficiency of these tourist destinations. We could reduce the fixed expenses, and the tourists would have a possibility of choice of service:

- Only rural tourism services,
- Only health and wellness tourism services, or
- A suitable combination of the two.

11 Op. cit. p. 77.

To this, we should add the possibility of completing the stay with appropriate common out-of-pension contents.

In this way, we would create the possibility for branding certain tourism products, and the large number of baths that now have problems with reception capacities could come to life again. The farmers would also get the possibility of making additional income (on accounts of tourist accommodation, selling agricultural products etc.). In this way, we could stop the negative trends that burden both rural areas as well as the development of numerous thermal baths.

Conclusion

Serbia does not have the resources significant for the development of mass tourism, i.e. seashore and mountains with favourable conditions for the development of ski tourism (with the exception of the Kopaonik Mountain). It must therefore seek its chance on the tourism market in theme tourism.

Two potentially perspective forms of tourism are baths (with wellness, spa, health and medical tourism) and rural tourism. This point of view is based on resource bases the country possesses. More than 85% of Serbia's territory is rural areas, populated by about 45% of the total population[12].

Serbia also has more than 40 baths and 50 thermal springs[13].

What comes as a problem is the outdated infrastructure of the baths' facilities and equipment. The problem of high fixed expenses could be reduced by increasing cost-effectiveness and efficiency, by combining rural with baths tourism. The idea is that tourists could use the receptive capacities of rural tourism in combination with treatments offered by health and wellness tourism. This would solve key problems that burden doing business in tourism in Serbia today – and that is cost-effectiveness in business.

Since many baths in Serbia are located in rural areas, the possibilities for this model of development are great. Already today, some baths (such as Vrnjačka Banja, Banja Vrujci etc.) use this kind of tourist accommodation. The strategic documents however, did not pay sufficient attention to this. In other words, this possibility for development was left to a kind of chaos. This implies the policy of undifferentiated marketing, where tourism products do not focus on certain market "targets". In this way, the results of tourism are smaller than what is realistically possible. As an alternative, there is the strategy of focus, which precisely defined tourism products.

The expectations are that this approach to tourism development in Serbia could, on a mid-term (5-10 years), revive most of the now neglected balneary capacities and improve the development of rural tourism.

12 Data from the 2002 Census.

13 Data from the TOS.

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KOMPLEMENTARNOST U RAZVOJU RURALNOG SA BANJSKIM, SPA I WELLNESS TURIZMOM

Predrag Vuković[14], Gordana Čavlin[15], Miroslav Čavlin[16]

Rezime

Srbija ima dugu tradiciju razvoja banjskog turizma. U drugoj polovini dvadesetog veka veliki broj banja privlačio je značajan segment turističke tražnje, kako iz zemlje, tako i iz inostranstva. Međutim, zbog otežanih uslova poslovanja tokom devedesetih godina, došlo je do njihovog infrastrukturnog zastarevanja. To je imalo za rezulat negativne trendove u turističkom razvoju i stvoren je negativan imidž na turističkom tržištu.

Sa druge strane, ruralni turizam je relativno noviji vid turizma. U Srbiji je počeo da se razvija od sedamdesetih godina dvadesetog veka. Značajan zastoj u razvoju i kod ovog vida turizma zabeležen je takođe u devedesetim godinama. Danas se upravo ova dva vida turizma proklamuju u razvojnim strateškim dokumentima od strane Vlade i resornog ministarstava, kao razvojna šansa *Srpskog turizma i privrede.*

Konceptualni pristup ovim vidovima turizma se u radu koristi kako bi se sagledale mogućnosti njihovog komplementarnog razvoja. Prevashodno se ima u vidu resursna osnova sa kojom Srbija raspolaže za njihov razvoj ali i nove tendencije i trendovi na turističkom tržištu. Ovekivanja su da bi kroz sinergijsko dejstvo ovih dvaju vidova turizma se ostvarili bolji rezultati, a Srbija bi se kao destinacija bolje pozicionirala na međunarodnom turističkom tržištu.

Ključne reči: *ruralni turizam, turistička destinacija, banja, spa, wellness.*

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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)

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Anđela Marković[2], Petar Petrović[3], Mirko Mirković[4]

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Key words: *navesti, maksimalno, pet, ključnih, reči.*

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Introduction

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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)

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