UDC 338.43:63

ISSN 0352-3462

ЕКОНОМИКА ПОЉОПРИВРЕДЕ

ECONOMICS OF AGRICULTURE

Vol. LXI, No 3(553-828), 2014

BELGRADE

UDC 338.43:63

ISSN 0352-3462

ЕКОНОМИКА ПОЉОПРИВРЕДЕ
ECONOMICS OF AGRICULTURE

61.

"Сагласно одлуци из члана 27. став 1. тачка 4), Закона о научноистраживачкој делатности („Службени гласник РС", бр. 110/05, 50/06-испр. и 18/10), утврђена је категоризација домаћих научних часописа

Листа часописа за друштвене науке

5. Економика пољопривреде М24"
(Часопис међународног значаја)
http://www.nauka.gov.rs (28. Jun 2010)

Београд, јул-септембар 2014. године
Belgrade, July-September, 2014

Часопис
◊ ЕКОНОМИКА ПОЉОПРИВРЕДЕ ◊

Journal
◊ ECONOMICS OF AGRICULTURE ◊

Основан 1954. године / Established 1954

ИЗДАВАЧИ / PUBLISHERS

Научно друштво аграрних економиста Балкана, Београд
The Balkan Scientific Association of Agrarian Economists
Институт за економику пољопривреде, Београд (Србија)
Institute of Agricultural Economics, Belgrade
Академија економских наука, Букурешт (Румунија)
Academy of Economic Studies, Bucharest (Romania)

Адреса уредништва / Editorial office
Београд, Волгина 15; тел/факс (+381)11/6972-848; E-mail: economicsofagriculture@ea.bg.ac.rs
Belgrade, Volgina 15; phone/fax (+381)11/6972-858; E-mail: epoljoprivrede@gmail.com

http://ea.bg.ac.rs

INTERNATIONAL EDITORIAL REVIEW BOARD

UDC 338.43:63 **ISSN 0352-3462**

ECONOMICS OF AGRICULTURE

CONTENT

Original scientific paper
Economics of Agriculture 3/2014
UDC: 368.5

CROP INSURANCE – RISKS AND MODELS OF INSURANCE

Vladimir Čolović[1], Nataša Mrvić Petrović[2]

Summary

The issue of crop protection is very important because of a variety of risks that could cause difficult consequences. One type of risk protection is insurance. The author in the paper states various models of insurance in some EU countries and the systems of subsidizing of insurance premiums by state. The author also gives a picture of crop insurance in the U.S., noting that in this country pays great attention to this matter. As for crop insurance in Serbia, it is not at a high level. The main problem with crop insurance is not only the risks but also the way of protection through insurance. The basic question that arises not only in the EU is the question is who will insure and protect crops. There are three possibilities: insurance companies under state control, insurance companies that are public-private partnerships or private insurance companies on a purely commercial basis.

Key words: *insurance, agriculture, crops, premium, risk.*

JEL: *K12, Q10*

Introduction

Agricultural insurance is a type of insurance that carries various risks and many of them, if actualized, result in serious consequences. For this reason, agricultural insurance is a challenge for insurance companies (insurers), both state-owned and privately-owned insurers. Also, at the same time, it is a challenge for the government whose interest is to protect this branch of economy that is due to "unforeseeable" and serious risks subject to large losses. Crop insurance in most cases also includes fruits, is one of the forms of this type of insurance linked to various risks. But, generally, insurance is not the only form of crop and agriculture protection. There are other protection models as well. However, the bringing of one agriculture protection plan through insurance, with the expectancy of various models, is the safest and overall protection.

1 Prof. Vladimir Čolović, Ph.D, Full Professor, Principal Research Fellow, Institute of Comparative Law, Terazije 41, 11000 Belgrade, Serbia, Phone: +381 11 323 32 13, E-mail: vlad966@hotmail.com

2 Prof. Nataša Mrvić Petrović, Ph.D, Full Professor, Principal Research Fellow, Institute of Comparative Law, Terazije 41, 11000 Belgrade, Serbia, Phone: +381 11 323 32 13, E-mail: petroviczdravko@ikomline.net

The question is as to what the starting point is for the rural producer to bring his/her own decision concerning crop insurance. Firstly, the minimum amount of money that would pay costs and ensure profit. Secondly, the main crop risks. After response to those two issues, a decision can be brought concerning a specific insurance product. Practically, a larger insurance premium would cover more risks. But, it is necessary to opt for optimum insurance (Bastian, 1999).

In order to reach optimum insurance, it is necessary to fulfil several factors and this affects the volume of the amount for which one rural producer is prepared to give in part or fully to alleviate the effects leading to agricultural losses. Those are: 1. Evaluation of the size of potential loss in respect of the rural producer's profit; 2. Evaluation of loss frequency: 3. Reality of expected real loss; 4. Evaluation of the cost of risk alleviation; 5. Determination of measures that management risk strategy provides protection from losses; 6. How much is an agricultural husbandry prepared to pay in order to adopt a specific strategy for risk management (Smith, Watts, 2009).

In order to discuss the risks related to crop insurance, it would be firstly necessary to pay attention to the concept of risk and its particular types.

On risk generally

Almost any insurance is associated to risk. Risk is a state of uncertainty. It is a future, uncertain event the realization of which may cause specific damage or benefit (Šulejić, 2005). Within insurance, risk realization is essential from the aspect of source of the harmful event. When risk is actualized, the insurer is obliged to pay the sum insured. Some authors, regarding risk actualization, make a difference between the economic and public damage. They link public damage to non-life insurance (property, liability insurance, etc.), whereas public damage they link to life insurance (Žarković, 2008). We cannot fully agree with this implication as the difference is very slight and both types of damage could be discussed with different insurance types. Risk could be observed, separately, from the point of view of insured and particularly from the point of view of insurer. If we observe risk from the point of view of insured in the first place, we look at protection from risks. One of those protections is insurance. From the aspect of insurers, we argue insurance activities as well as insurance business alone.

Different types of insurance are associated with various risks. It is not the same risk in motor insurance vehicles for the damage caused to persons who are third parties and in insurance against effects of an accident. The greater the risk, the greater the possibility for the harmful event to occur, ie., the insured case. There is a danger of an increasing number of risks when insurance is compromised, i.e. a possibility of one insurance company to cover specific risks and pay for damages. One of the major problems relating to the existence of risks is its multiplication that is not only an increase the number of risks, but also an increase in the volume of risks (Čolović, 2013).

According to risk importance, there is a difference between compulsory, desirable and available insurance. This categorization is important for the insured as he/she cannot insure

all risks. Namely, compulsory insurance covers risks that must be insured as well as risks with catastrophic effects that threaten the survival of the insured. Desirable insurance includes risks that could cause serious damage. Available insurance includes those risks that could be "covered", if realized from own resources (Ivanović, 2003).

The next categorization is also important from the insured's aspect, but also from the aspect of the insurer's solvency. It is a chance for insurance so that all risks could be divided into three groups: a) risks that could be fully transferred to the insurer; b) risks that could be partially transferred to the insurer; b) risks that could not be transferred to the insurer at all. All risks that offer economic protection without limitation of the amount of coverage are those that could be fully transferred to the insurer by concluding insurance. The risks that could only be partially transferred to the insurer are those risks that exceed total capacities of insurers and all reinsurance, by the size of potential damage, and one portion of surplus risk remains uncovered. Those are catastrophic risks. The risks that could not be transferred to insurance companies are those risks that are not covered by any insurance type (Milikić, 2005).

Agricultural insurance risks

The above mentioned risk types may refer, inter alia, to agricultural insurance. It is certain that those risks could also refer to other insurance types. Farmers, very often, face completely new risks. This happens because there are structural changes in agricultural production. Growth in agricultural production inevitably leads to increased mechanization, automatization and intensive production. Any new production processes lead to losses in overall business (Rüegger).

"Ideal risk" is very often mentioned in agricultural insurance. The issue of "ideal risk: must be responded in each particular case. Conditions for "ideal risk" must be fulfilled as much as possible so that we could speak about feasible protection through insurance. Risk, as we have already said, must appear independently of anyone's will and at random. Losses would also be determinable and measurable. "Ideal risk:, from the point of view of the insurance company is a hail The hail could cause serious damage in agricultural production, but, it is actually a small and predictable insurance risk (Rüegger).

The issue of agricultural insurance, otherwise, is very important, but even more so in recent times. Namely, direct insurance premiums in agriculture have significantly risen in the last 15 years. The world level recorded a growth of a total of 8 billion dollars in 2005 to 18,5 billion dollars in premiums in the year 2008. As far as geographical representation is concerned of global premiums in 2008, the main part relates to USA and Canada, whereas European countries account for 17% of participation in total premium and occupy third position behind Asian countries with 18% participation. In the structure of premium for 2008, crop insurance dominates with 90% of total premiums, whereas all other insurance types in agriculture get premiums of 10%. Insurance products in agriculture existing on the world market could be classified in three main groups based on methods by which the sum insured is paid out: 1) payment of the sum insured is made according to the harmful

event realized, 2) payment of the sum insured is measured by the index and 3) payment of the sum insured is determined based on realized yields and product prizes (Manić, 2012).

Crop insurance

Both short-term and long-term forecasts by meteorologists and researchers of climatic changes purport that, apart from global warming, we must expect large quantities of downfalls and violent weather storms that would destroy agricultural cultures to a great extent. Any farmer and the state must have this in mind and specify measures that would protect agricultural cultures from threatening weather conditions and mitigate the loss of crop yields (Marković, Jovanović, 2008).

Fundamentals risks that are protected with crop insurance are hail, fire and thunder. Additional risks are storms, floods and frost. The level of development of crop insurance is measured with the risks covered by insurance, various policy types and with government support (subventions). Later on, we will discuss crop insurance in some European countries. Now, we could say France, Spain, Great Britain, Italy and Germany have the largest area of cultivable soil and the issue of crop insurance in those countries is very essential. It is well known that due to large percentage of funds set aside from the joint budget and the small percentage of agriculture in gross national product, joint agricultural policy carries the epithet of one of the most controversial EU joint policies. Details about risks covered by crop insurance and yields in EU are obtained based on meteorological and agro-meteorological data received after monitoring cereal growth based on vegetation index received from satellite images and EUROSTAT databases (office for EU statistics collecting and publishing statistical data), (Labudović, Todorović, 2011).

Very often within the crop insurance speaks about moral hazard. It is the conduct of the insured with respect to the subject matter of insurance. One of the ways of preventing moral hazard is franchise in insurance. Namely, franchise, i.e., the insured stakes in the premium, and, also, the bonus malus system, aim to reduce the mentioned moral hazard, which refers to the biased risk and adverse selection. As a general rule, the heavier risks are followed with the larger franchises. If the franchise would not have been contracted, i.e., if farmers do not participate partly in the damage, this means they have no incentive to take preventive measures. Larger franchises follow new insurance products for which there is very scarce or there is no experience regarding the damage (Labudović, Todorović, 2011).

*

* *

We have already said that insurance is not the only protection in this sphere. There are various models of protection of agricultural cultures, or crops. Some of those models are: funds for compensation for damages resulting from natural disasters, joint insurance funds and insurance. Whether funds for compensation for damages resulting from various weather storms depends mostly upon the government, or its agricultural policy. When there are no market-oriented models for agricultural protection, such as insurance and regional insurance funds, or when it is not enough, those funds help farmers in case of natural catastrophes

or serious weather storms. In this way, most often are compensated losses of those risks that farmers cannot insure. Joint insurance funds are organized regionally and refer to funds where farmers alone protect themselves from weather storms. The advantage of this regional organization is to avoid this way moral hazard and unnatural selection as the main problems in insurance. As we have already mentioned, moral hazard refers to behaviour by farmers who have insured their crops. They, namely, frequently do not undertake measures for protection of their agricultural cultures so that in case of a harmful event they would lower their losses. Such behaviour has been caused by concluded insurance as, in the case of a harmful event, the insurer would pay for damages. On the other hand, the deficiency of such funds is danger that all or the majority or farmers suffer losses at the same time and this of course could happen if all or the majority of farmers who have set up this fund, have their estates on a specific territory. Also, one should say, that farmers do not always manage to successfully organize such joint insurance funds. Insurance is surely the best instrument for risk management that appears as an important stability factor of any production (Marković, Jovanović, 2008).

Three models of crop insurance

It is very hard to define models of crop insurance. In order that this insurance type be developed in one country, it is necessary to fulfil certain conditions not only for insurance development in this country, but also the conditions relating to the government strategy in terms of agricultural policy and government investments in agricultural development. Nevertheless, we can define three basic market models through which insurance in agriculture can be accomplished:

1. Systems fully controlled by the government – they are characteristic for very intensive support by the government with the existence of one unified insurance product that is usually commercialized through a state-owned insurance company with a monopolistic position. Those systems are characteristic, expectedly, with a large market penetration due to the obligation and good portfolio diversification, but they means high fiscal expenses, frequent bad service caused by monopolistic position. In this model, the role of the state is the key, i.e., that of the insured where the state has full control;
2. Public – private partnerships – have high penetration and a good diversified portfolio, technical criteria dominate over commercial, there is competition in the provision of services, and the state reinforces system stability. Also, the private sector provides the knowledge and technology, all with reasonable fiscal benefits; and
3. Complete market system - have low to moderate penetration and low level of risk diversification, , commercial criteria dominate over technical, with the realization of competitive prices and without fiscal expenses (Manić, 2012). Practically, all in this model depends on the interests by insurer for dealing with this kind of insurance and this interest, also, depends on definition of agricultural policy in one country.

One should mention the study by the World Bank of 2009 that encompassed an analysis of situations in 65 countries when insurance models in this sphere are concerned. Various approaches have been notices in cases when the government decided to intervene in the

market insurance segment in agriculture. As regards premium subsidy, this form is the most frequent form of government support to agricultural insurance. The above study shows that even 63% of countries have opted for this kind of support for crop insurance. When speaking about investments in research work and development of agricultural products, training and collection of information, this study shows that 41% of countries have opted for this form of support for crop insurance. Development of legal rules associated with agricultural insurance is very essential and by the same study 51% countries have decided for this form of support for crop protection. Subsidy of administrative costs for issuing insurance policies in agriculture is the least used form of support and according to the same study only 16% countries have opted for this form of support for crop protection (Manić, 2012). This study, also, refers to other insurance types within agricultural insurance. We must say that premium subsidy by the government, without development of other models when state intervention in this insurance type is concerned, cannot bring long-term results. If we compare the percentage of countries that opt for subsidy with the percentage of countries that have decided for development of legal rules in this sphere, we shall see that decisions concerning premium subsidy are brought pursuant to the current need and circumstances.

Crop insurance systems in EU

When we discuss insurance systems, we actually think of risks. In European countries, crops are most frequently insured against hail. There are countries such as Belgium, Great Britain, Ireland, Denmark and Finland in which crops can be insured solely against hail (Marković, Jovanović, 2008).

The so-called classic crop insurance types are applied in EU: insurance covering one risk, combined insurance and yield insurance. Insurance covering one risk is also called "Single-peril" or "Named-peril". It encompasses individual coverage and usually related to hail. Combined insurance (several risks) is called "Multiple-peril" (Labudović, Todorović, 2011). Profit insurance should also be mentioned as a form of agricultural protection that has existed in Great Britain for a very long time. This insurance covers risk of yield change and risk of product price change. However, it should be mentioned that risk of product price change falls in the so-called market risks that, as a rule, are noninsurable (Labudović, Todorović, 2011).

In addition to the insurance against hail, crops are frequently insured against other risks such as fire, frost, storms, etc. Insurance against drought, which is very problematic for farmers, very often does not fall in insured risks that we classify in combined insurance. Drought has a character of systemic risk because it can occupy a large territory and as a result there are a large number of claims for damages at the same time by a large number of insured. This is why it is not included in combined insurance, but it is in yield insurance (Labudović, Todorović, 2011). The countries in which this insurance system is present are former countries of the so-called "Eastern Bloc" that are now EU members. In those countries, namely, insurance used to be under government control and it was compulsory. When those countries adopted the market business system, including insurance, privatization occurred. Still, those insurance systems continue to develop. There are some differences in Poland though.

Yield insurance is a special form of crop insurance. This insurance covers yield losses of specific crops resulting from the effects of foul weather. This insurance cannot be classified in multiple-peril insurance as it can be sometimes classified in combined insurance and sometimes we must apply it independently. The yield insurance system, which is present in several European countries such as Portugal, Austria, Luxembourg, Greece, Cyprus, France and Italy, damage must be evaluated that is a result of foul weather. When Spain is concerned, crop insurance against several risks includes loss of yield caused by the harmful event, or by the natural catastrophe. It is calculated when difference is determined between the guaranteed and effective yield. It is similar in USA and Canada (Labudović, Todorović, 2011).

Yield insurance of the whole husbandry covers loses of all crops in an agricultural husbandry. Lower yields of one crop will not be compensated by the insurer if lower production of the whole husbandry does not reach corresponding limiting value (Marković, Jovanović, 2008). Yield insurance covers losses caused in smaller yield due to bad weather. It is less represented due to high premiums. This form of protection exists in Austria, Luxembourg, France and Spain. Italy and Spain have a high risk of drought destroying pastures and rain during harvest falls in Austria, Italy and Poland. In Austria, this insurance is offered by specialized companies for mutual insurance. Unlike EU countries, in Canada and USA yield insurance is broadly represented. In USA, this insurance covers a large number of risks: drought, excess moisture, hail, wind, frost, insects and various diseases (Labudović, Todorović, 2011).

We would also like to mention here production value insurance that is a combination of yield insurance and price. In this case, compensation is paid if that production value does not reach the corresponding value. We also have profit insurance whose calculation includes production costs. Still, this system is more frequent in USA.

Insurance based on indices (indexed insurance) is based on details associated with a specific region or administrative unit (Labudović, Todorović, 2011). Indexed insurance as a basis takes the index brought into existence when measured by the authorized government agencies and not based on farmers' experience. The advantage of this insurance is that premiums and compensations for damages do not depend on individual experience by farmers and this is why there is no negative selection and moral hazard (Labudović, Todorović, 2011).

In the total structure of offers of crop insurance services, EU least accounts for yield insurance. All mentioned insurance types are offered by private insurers. The exceptions are Greece and Cyprus where there is a government program of crop and fruit insurance. Also, this insurance is compulsory in these countries (Labudović, Todorović, 2011). In Greece, otherwise, agricultural insurance is compulsory. The independent state organization ELGA provides various insurance types for crops against a large number of risks such as hail, frost, storms, floods, excess heat, excess downfalls and out-of-season downfalls, damages of bears and wild pigs, etc. (Agricultural Insurance).

*

* *

In most European countries full (complete) insurance is available solely for hail risk and in a limited range for frost and storm risks. When fruit insurance is concerned and it is very sensitive when speaking about frost risks, the insurance premium can reach 15 to 20% of the sum insured depending on the area where plantations are located, fruit types, possible franchises, etc. Agricultural producers can hardly afford such insurance. As a result of all this, many farmers in some parts of France have no insurance in this sphere (Rüegger).

One of the possibilities for overcoming this problem is risk transfer, or use of specific mechanisms that may provide protection on a broader scale. Many alternative concepts of risk management already exist and many depend on complex financial transactions and most include a considerable degree of self-funded losses. Such mechanisms are often cheaper than traditional insurance (Rüegger).

Crop insurance in USA

We have already mentioned several times some of the characteristics of crop insurance in USA that is well developed in this country. It is mainly combined insurance that covers several risks. Premiums are subsidized to a great extent and insurance is based on the evaluation of possible damages, weather forecast, etc. Compensation for damages is paid out if yield or profit fall below the guaranteed value (Agricultural Insurance).

Crop insurance program in USA includes traditional insurance against several risks and profit insurance. Premiums for profit insurance (and the sum insured) are determined based on expected profit and this is determined based on average profit in a specific period of time and also on the basis of market expectations (Dismukes at al., 2004).

Subsidized insurance premium in EU countries

In many EU member countries, farmers are allowed to have subsidized insurance premiums for the purpose of encouraging a more rapid development of this type of insurance. Practically, the state in this way allows risks to be reduced to a minimum (Manić, 2012). If we discuss government participation in insurance, or premium subsidy, one of more important conditions would be introduction of compulsory previous insurance conclusion by the agricultural producer so that the state could have an insight in the type of insurance and cover (Manić, 2012). State interventions are different when agricultural insurance is concerned. They can have the form of direct subsidies or indirect for expenses, loss and reinsurance. Many countries have provided subsidies to cover one part of the premium, whereas others have provided nearly all aspects of multiple perils associated for realizing risks like in USA and Canada (Smith, Glauber, 2012). When the agricultural insurance sector is under the influence of several state programs, one set of those policies could have effects on others. This is particularly important to emphasize for crop insurance (Smith, Glauber, 2012). When subsidized premiums by the state are concerned, the situation is different in EU member countries. We are giving some examples here. In

Italy, percentage of subsidy is 64% of total premium and the same percentage is also for multiple perils insurance for yield insurance. In Spain, this percentage is 49% including regional subsidies. In Austria it is 46% including regional subsidies and 50% against frost and hail. In the Czech Republic it is 30% for crop insurance. In Slovenia 30 to 50% is given for basic risks. In Cyprus it is 50% against all risks for compulsory insurance schemes (Bielza et al., 2009).

Denmark is a very important example of market penetration with yet 85% insured hectares of total cultivable land. For all payments by the state, over the level of insured amounts, Denmark conditioners its farmers with participation in the Fund for catastrophic damages which compensates for any damages in case of harmful events. In Bulgaria, which has a high level of market penetration, agricultural insurance is not compulsory, but one of the conditions to obtain subsidy in agriculture from the state is concluding of adequate insurance policy. In Poland, similarly to the Bulgarian model, farmers are also conditioned with insurance policies in order to use subsidy in agriculture from EU funds.

Apart from the fact that some EU countries do not condition subsidies in agriculture with agricultural production insurance policies, like in Austria and Sweden, the confirmation to the effect how developed awareness of insurers concerning necessity of agricultural insurance has an effect on the degree of market penetration are those two countries. In Austria, even 78% of total cultivable soil is insured and in Sweden this percentage is 60% (Manić, 2012).

We must also mention Hungary, which is a good example for the influence that premium subsidy has on insurance development in agriculture. Since 2004, Hungary has discontinued earlier premium subsidies, many farmers have not insured their production and this resulted in an increase of total risks and a considerable fall of the insurers' profits. In accordance with this situation, Hungary has decided to take an active role again and develop an insurance agricultural model like in Spain. Many countries could use this model and it will be mentioned later on.

French and Italian agricultural insurance systems have been developed in the past four decades under the supervision of governments of those countries and inside the European joint agricultural politics. This was rather contributed by the Agriculture Agreement brought within the World Trade Organization that allowed development of this insurance system with the support of public insurance sector. This system was also helped by the experience of the countries of North America and South Europe (Spain, Italy and Greece). Also, agricultural politics of European countries have had to consider price instability and frequent exposure of farmers to natural catastrophes. (Enjolras et al., 2012).

In France, by 1964, there was no agricultural insurance program that was sponsored by the state. After a number of droughts, a National Guarantee Fund was founded for farmers affected by disasters and it was jointly funded by the budget and taxes levied on compulsory standard insured policies concluded by farmers (Enjolras et al., 2012).

As far as state intervention in Italy is concerned in this sphere, "Fondo de Solidarfieta Nazionale in Agricoltora" has been functioning since 1974. Its aim is to provide funds to farmers so that they could effectively manage their production risks. This system has evolved over the years through various reforms until Italy has received guidelines from EU for giving state support in the agricultural sector (Enjolras et al., 2012).

In many countries there are no public private partnerships with government support allowing conclusion of agricultural insurance with private companies or producers' cooperatives. One of the leading programs in this sphere is associated with Spain. The Spanish model is a specially created model of public-private partnership (Manić, 2012). In 1980, Spanish government founded "Agroseguro" that consisted of private insurance companies and national reinsurance companies. "Agroseguro "specifies rates for various insurance products offered to agricultural producers with subsidized prices (Smith, Glauber, 2012). It is cooperation of the private and public sector through participation of the Ministry of Agriculture agency "Enese" and the above association of private insurance companies "Agroseguro" and the state company "CSS" (Concorsio de Compensacion de Seguros) that is under control of the Ministry of Economy with a task to provide reinsurance of excess risk in such insurance. When "Enese" is concerned, this agency brings an annual insurance plan in agriculture and then takes part in decision-making concerning the amount of premium subsidy and coordinates cooperation with farmers' associations, provides general insurance conditions and cooperates with the association of insurance companies regarding plans for insurance implementation. "Agroseguro" provides special conditions and insurance rates, performs control of sale channels, premium payment and damage handling. "CSS" has the role of the main reinsurance company, it is a participant in the fund and performs control of handled damages. The Spanish model is characteristic because the insurance companies manage risks with the help of the fund based on coinsurance. The fund is under control of "Agroseguro" and is reinsured by "CSS" (Manić, 2012).

In Spain, agricultural insurance policy is based on giving guidelines to autonomous regions that could specify their own needs in any specific case. The Spanish system is based on the following principles: - universal application aimed at covering as many risks as possible in as many regions as possible; - voluntary insurance; - insurance is the responsibility of any insured – farmer and insurance companies must not refuse to insure the "recognizable risk"; - full risk coverage (Agricultural Insurance).

Crop insurance in Serbia

We will briefly mention implementation of agricultural insurance in Serbia. There are two basic forms in this area: crop and fruit insurance and animal insurance. In crop and fruit insurance it covers loss of yield as a result of damages of agricultural cultures of insured risk. This coverage includes the following risks: hail, fire and thunder. We must say that this insurance emphasizes hail risk. This insurance can include storm, flooding and frost risks and insurance against loss of seed quality, loss of quantity and quality of fruit and table grapes, etc.

In addition to the above risks, we must mention the risks that have been insured in recent times. Those are drought risks for particular agrarian cultures and risks of excess downfalls. Although these types of insurance of crops and fruit are still new here, it must be said in principle that this insurance type is gradually paid increasing attention (Manić, 2012).

Conclusion

It is hard to say which crop insurance model would suit the needs of agricultural producers. Selection of insurance models depends on many factors we could observe both from the state point of view and from the point of view of agricultural producers. We must consider average yield values, weather conditions and short-term and long-term weather forecast. If we discuss yield insurance of a specific region, then, as an insurance basis we must take into account the difference between earlier determined average yield for that region and the actually realized average yield. In such case, possible compensation would be paid independently of real damages on some rural estates. If we discuss insurance based on production value of a particular region, it is based on the product with average yield and price for the particular region. If this amount is lower than the previously determined average value of production for this region, compensation will be paid to all insured rural producers of this region. On the other hand, indirect indexed insurance does not relate to average yield of a particular region, but to adequate meteorological parameters. In this case, compensation is paid if the specified limiting value has been exceeded or has not been reached. The limiting value refers to the quantity of downfalls or average temperature (Marković, Jovanović, 2008).

Agricultural insurance is complex and requires high technological expertise in all operating phases, from risk evaluation, through insurance conclusion to damage calculation and its compensation. Private insurance markets have proved to be efficient in this sphere, but pure commercial insurance cannot be sustainable for systemic risks and small agricultural producers. The primary role of the state should be to develop insurance markets and eliminate regulatory shortcomings aimed at encouraging reinsurance, among other things (Mahul, Stutley, 2010).

The following must be defined when determining models of state support to agricultural insurance: 1. foundation of an expertise centre that would be able to gradually increase the number of concluded insurance in this sphere; 2. foundation of a core for a team of agricultural insurance experts; 3. creation of a central database with all elements relating to agricultural insurance and allowing availability of such base; 4. promotion and exchange of knowledge between insurance companies through organized training, issue of manuals, etc. (Mahul, Stutley, 2010).

Literature

1. *Agricultural Insurance*, available at: https://www.agriculture.gov.ie/media/migration/agrifoodindustry/foodharvest2020/foodharvest2020/2020strategy/2020RiskIns.doc

2. Bastian, C. (1999): *Crop Insurance as a Tool*, Risk and Resilience in Agriculture, University of Wyoming, Cooperative Extension Service, pp. 1-7, available at: www.uwagec.org/rnrinag/RnR%20Section%202/Crop%20Insurance%20as%20a%20Tool.pdf
3. Bielza Diaz-Caneja, M., Conte, C. G., Gallego Pinilla, F. J., Stroblmair, J., Catenaro, R., Dittmann, C. (2009): *Risk Management and Agricultural insurance Schemes in Europe*, European Commission, Joint Research Centre, Institute for Protection and Security of Citizen, Luxembourg.
4. Čolović, V. (2013): *Primena projekta „Solventnost II" i mere koje su predviđene u Zakonu o osiguranju Srbije u slučaju neprimene pravila o upravljanju rizikom*, Zbornik radova sa međunarodnog naučnog skupa „Osiguranje i naknada štete", Zlatibor.
5. Dismukes, R., Bird, J., Linse, F. (2004): *Risk Management Tools in Europe: Agricultural Insurance, Futures and Options*, U.S.-EU Food and Agriculture Comparisons/WRS-04-04, Economic Research Service, USDA.
6. Enjolras, G., Capitanio, F., Adinolfi, F. (2012): *The demand for crop insurance: Combined approaches for France and Italy*, Agricultural Economics Review, Vol. 13, No. 1, pp. 5-22.
7. Ivanović, S. (2003): *Upravljanje rizikom i osiguranje*, časopis Industrija, Ekonomski institut, Beograd, vol. 31, br. 1-2, pp. 69-82.
8. Labudović Stanković, J., Todorović, N. (2011): *Osiguranje biljne proizvodnje u EU i Srbiji*, Ekonomika poljoprivrede, IEP Beograd, vol. 58, no. 4, pp. 723-734.
9. Mahul, O., Stutley, C. J. (2010): *Government Support to Agricultural Insurance Challenges and Options for Developing Countries*, the World Bank, Washington.
10. Manić, V. (2012): *Osiguranje u poljoprivredi: Uloga javnog sektora, industrije osiguranja i pravci razvoja*, Drugi poljoprivredni forum „Hrana za Evropu – u susret novoj strategiji razvoja agroprivrede Srbije", Panel 4: Osiguranje u poljoprivredi: preduslov za sigurnije poslovanje, Subotica.
11. Marković, T., Jovanović, M. (2008): *Postojeći sistemi osiguranja useva i plodova kao instrument za upravljanje rizikom u poljoprivredi,* Agroekonomika, Poljoprivredni fakultet Novi Sad, br. 39-40, pp. 110-116.
12. Milikić, N. (2005): *Upravljanje rizikom procene maksimalnog samopridržaja*, specijalistički rad, Ekonomski fakultet Univerziteta u Beogradu, Beograd.
13. Rüegger, M., *Trends in Agriculture Insurance in the European Union*, Agriculture Reinsurance, Winterthur, Switzerland, available at: www.microinsurancecentre.org/resources/documents/doc_download/330-trends-in-agricultural-insurance-in-the-european-union.html
14. Smith, V. H., Glauber, J. W. (2012): *Agricultural Insurance in Developed Countries: Where Have We Been and Where Are We Going?*, Applied Economic Perspectives and Policy, vol. 34, no. 3, pp. 363-390.
15. Smith, V. H., Watts, M. (2009): *Index Based Agricultural Insurance in Developing*

Countries: Feasibility, Scalability and Sustainability, Monograph published electronically by the Bill and Melinda Gates Foundation, November 2009, available at: www.yumpu.com/en/document/view/16834278/index-based-agricultural-insurance-in-developing-countries-

16. Šulejić, P. (2005): *Pravo osiguranja*, Misao, Beograd.

17. Žarković, N. (2008): *Ekonomika osiguranja*, Univerzitet Singidunum, Beograd.

OSIGURANJE USEVA – RIZICI I MODELI OSIGURANJA

Vladimir Čolović[3], Nataša Mrvić Petrović[4]

Rezime

Pitanje zaštite useva je veoma važno zbog različitih rizika koji mogu da izazovu teške posledice. Jedna vrsta zaštite od rizika je i osiguranje. Autor u radu navodi različite modele osiguranja u nekim zemljama EU, kao i sisteme subvencionisanja premije osiguranja od strane države. Takođe, autor daje sliku osiguranja useva i u SAD, navodeći da se u ovoj zemlji poklanja velika pažnja ovoj materiji. Što se tiče osiguranja u Srbiji, ono nije na zavidnom nivou. Osnovni problem kod osiguranja useva nije vezan samo za rizike, već i za način zaštite putem osiguranja. Osnovno pitanje koje se nameće ne samo u EU je ko će osigurati i zaštiti useve. Postoje tri mogućnosti: osiguravajuća društva koja su pod kontrolom države, društva koja predstavljaju javno-privatna partnerstva ili privatna društva na čisto tržišnim osnovama

Ključne reči: *osiguranje, poljoprivreda, usevi, premija, rizik.*

3 Prof. dr Vladimir Čolović, redovni profesor, naučni savetnik, Institut za uporedno pravo, Terazije 41, 11000 Beograd, Telefon: +381 11 323 32 13, E-mail: vlad966@hotmail.com

4 Prof. dr Nataša Mrvić-Petrović, redovni profesor, naučni savetnik, Institut za uporedno pravo, Terazije 41, 11000 Beograd, Telefon: +381 11 323 32 13, E-mail: petroviczdravko@ikomline.net

Original scientific paper

Economics of Agriculture 3/2014
UDC: 330.143:631.115.11

PROFITABILITY OF FAMILY FARMS DIRECTED AT CROP PRODUCTION[1]

Petar Munćan[2], Saša Todorović[3], Mihajlo Munćan[4]

Summary

The efficiency in crop production depends on, on the one hand, achieved yields and selling prices (production value) and, on the other hand, on the incurred production costs. These data suggest different economic indicators which indicate the efficiency of farm operations. Data on the basic parameters of production were collected using the method of survey, which was conducted during the five-year period (2009-2013) on the selected 40 family farms (<100 ha), divided into five groups, each consisting of 8 farms, oriented exclusively towards crop production in the region of two municipalities in the South Banat District. Production efficiency and rational usage of available resources of observed family farms were measured by calculating their profit including state incentives for agriculture and evaluating their own resources engaged in the production.

Key words: *profit, family farm, crop production, opportunity costs.*

JEL: *Q12, Q15*

Introduction

The value structure of agricultural production in Serbia is dominated by plant production, with an average share of more than 65%, ranging from 59.8% to 70.1% in the period of 2003-2012. Crop production, as the most important branch of plant production, takes place averagely on the area of over 2.7 million of hectares per annum, while its share in the value structure of total agricultural production, in the observed period, ranged from 46.8% to 59.2%. About 82.7% of this production takes place on the family farms, which according

1 The paper is a result of the research conducted within the project of the Ministry of Education, Science and Technological Development of the Republic of Serbia No. 179028, entitled „Rural labour market and rural economy of Serbia - diversification of income and reduction of rural poverty".

2 Petar Munćan, Ph.D., Full Professor, University of Belgrade, Faculty of Agriculture, Nemanjina Street No. 6, 11080 Zemun, Serbia, Phone: +381 11 2615 315/ext. 413, E-mail: muncan@agrif.bg.ac.rs

3 Saša Todorović, Teaching Assistant, University of Belgrade, Faculty of Agriculture, Nemanjina Street No. 6, 11080 Zemun, Serbia, Phone: +381 11 2615 315/ext. 406, E-mail: sasat@agrif.bg.ac.rs

4 Mihajlo Munćan, Teaching Assistant, University of Belgrade, Faculty of Agriculture, Nemanjina Street No. 6, 11080 Zemun, Serbia, Phone: +381 11 2615 315/ext. 406, E-mail: mmuncan@agrif.bg.ac.rs

to the 2012 agricultural census amount to 628,552, and they own more than 2.5 million of hectares of arable land. Regarding the crops, the vast majority of production of the most important field crops occurs on the family farms: about 88% of the total maize production, about 73% of wheat production, about 65% of sunflower production and about 50% of soya bean and sugar beet production (Božić and Munćan, 2007). The vast majority of crop production of the Republic of Serbia occurs in the region of AP Vojvodina. About 52% of the cereal-growing area and more than 92% of the industrial crop-growing area of Serbia are located in this region (Bošnjak and Rodić, 2010; Bošnjak and Rodić, 2011; Munćan et al., 2010). Family farms represent the most important holder of organising crop production in AP Vojvodina. According to the 2012 agricultural census, the number of these farms in AP Vojvodina amounted to 146,269, which makes 23.3% of the total number of farms in the Republic of Serbia. However, family farms in AP Vojvodina are mainly small, since the farms smaller than 2 ha make 46.9% of the total number of farms and use less than 3.1 % of arable areas. The farms larger than 10 ha amount to 17.5 % of the total number of farms and use 82.8% of arable areas in AP Vojvodina. Size of these farms is one of the decisive factors of the efficiency of agriculture. The agriculture of Serbia is traditionally characterised by the unfavourable farm size, which particularly applies to family farms which as the most numerous entities in agriculture dominantly determine its total development (Bogdanov and Božić, 2005). It is stated that the persistence of small farms may be associated with the provision of generous subsidies, which are negatively related to farms' technical efficiency but positively related to their profitability. Subsidies reduce technical and economic efficiency, but favour allocative efficiency and profitability (Bojnec and Latruffe, 2013).

Given the crucial importance of the farm size for the efficiency of operations in agriculture, it can be concluded that with such unfavourable farm size it is difficult to be competitive in the market in the conditions of increasingly strong competition. The process of integrations in 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 liberalisation occurs as a major driving force of innovation and increase in competitiveness (Bogdanov et al., 2004). Structural change also provides the possibility of increasing the competitiveness and efficiency of the entire agricultural sector through a better allocation of productive factors. Amongst the productive factors, land is the one that most often limits farm development (Bartolini and Viaggi, 2013). In this respect, the possibility of family farms to survive in the future, especially when entering the EU, is directly linked to their ability to make the best possible use of available resources. Bearing that in mind, the subject of research in this paper is the profitability of family farms directed at crop production from the region of AP Vojvodina.

The paper is aimed at determining the extent to which the farm size, expressed as the utilised area, and the size of land area rented influences the level of the profitability achieved on these farms.

Method of research and sources of data

Due to the unavailability of adequate statistical data for a more comprehensive analysis of the impact of the size of crop production oriented family farm on the achieved profitability at the level of the Republic of Serbia, more detailed examinations in this paper are based on data from the survey. The survey was conducted on the 40 selected family farms directed exclusively at crop production from the area of two municipalities in the South Banat District. The farms are, considering the size (the area of utilised arable land), divided into five groups: up to 10 ha, 10-20 ha, 20-30 ha, 30-50 ha and 50-100 ha. When selecting the farms, the tendency was to have an even distribution across the mentioned groups therefore each group comprised 8 farms.

The data collected by means of the survey are related to the following elements:

- production capacities (resources) of farms (utilised arable land (owned or rented), commercial buildings, mechanisation and labour force),
- yield per capacity unit of represented enterprises (maize, wheat, sunflower, soya bean and sugar beet),
- production value and production costs in terms of basic elements and
- main technical and technological parameters.

The decision to include the family farms of the size of up to 100 ha of arable land in the sample for this research derives from the fact that:

- the mentioned farms, according to the 2012 agricultural census, make use of 82.8% of arable land in AP Vojvodina; and
- the main condition for the eligibility for any kind of state incentives in agriculture, besides entering in the Register of agricultural farms, is that the farm size does not exceed 100 ha of arable land.

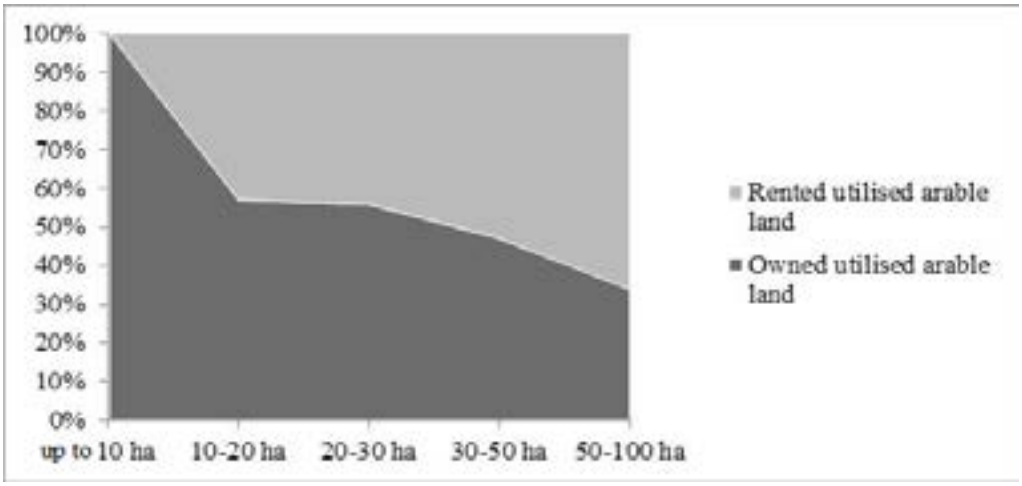
The analysis of operations of family farms directed at crop production includes the analysis of the production value, production costs and profit. Profit is calculated as the difference of realised revenues and total costs. Realised revenues include revenues from the sale of agricultural products and state incentives for crop production, while total costs include the costs of materials, services, labour, land rent and capital. All indicators in this paper were calculated on the basis of empirical data collected by using the survey. In order to avoid the effects of a more significant fluctuation of prices (input and output) and natural (meteorological) conditions on the obtained results in the production of crops when calculating financial indicators, the five-year price averages were used (2009-2013). Based on the economic parameters, using the appropriate form of the function, the size of farms in which the realised profit with and without state incentives for agriculture is determined as well as the size of farms in which the opportunity costs of their own land are covered.

Results and discussion

The average area of arable land cultivated by family farms surveyed was 38.79 ha and ranged from 9.31 ha to 94.74 ha. Using only the arable land by the investigated family

farms represents a favourable prerequisite for the organization of intensive crop production. The smallest farms use only their own arable land, whereas in the case of the largest farms rented land makes 66% of the total arable land used (Graph 1).

Graph 1. Used arable land owned and rented for the surveyed farms of different sizes



Source: Authors` calculation based on the survey data.

Cereals (wheat and maize) represent a dominant group of crops on the investigated family farms. Their share in the sowing structure of arable land ranges from 59.0% in the case of the largest farms to 81.0% in the case of the smallest farms. As regards the distribution of industrial crops (sunflower, soya bean, sugar beet), a certain tendency can be observed. Namely, the share of this group of crops rises when the used arable area increases. The smallest share of industrial crops is noticed in the case of the smallest farms, only 19%, whereas this share in the case of the largest farms amounts to 41% in the sowing structure of the arable land. This tendency can be primarily explained by the fact that the larger farms are better equipped with agricultural mechanisation which allows them simpler and more rational realisation of the technology of production of industrial crops, particularly sugar beet.

Increasing the farm size and changing the structure of crop production, that is, increasing the share of industrial crops in the sowing structure of arable land, the production value per ha shows the tendency of growth (Munćan et al., 1996). Thus, for example, in comparison with the smallest farm size, the realised average production value per ha is higher in the case of the largest farms, even by 25.53%. In addition, the income per an active farmer in the case of the largest farms (of the size of 100 ha) is more than fivefold higher than in the case of the smallest farms, whereas in comparison with the medium-sized farms of the size of up to 50 ha, it is almost twofold higher (Munćan, 2011).

On the other hand, the changes that occurred on the market of the primary agricultural products and inputs for agricultural production in the observed period had a huge impact on the input level. Under the existing conditions, many family farms have not been able to secure the

necessary funds which resulted in the reduction of the input level. Budget constraint has been found to be an important factor limiting farms' use of inputs not only in developing countries, but also in developed economies (Blancard et al., 2006). In this regard, potential savings in mineral fertilizers applied by some family farms in case of a lack of financial means and favourable sources of financing cannot be considered as rationalisation, because a reduced investment in this segment reflected negatively on profitability of production since it is well known that the quantity of applied mineral fertilizer is one of the factors which significantly influences the realised yield. Example of family farms where full agro-technical measures were applied, which included application of adequate quantities of mineral fertilizer, even in conditions of the high purchasing price of this input, has economic justification considering its contribution to the increase of profitability of the production (Munćan and Božić, 2013; Todorović et al., 2010; Todorović and Filipović, 2010). The lower level of intensity of production as a result of lack of resources leads to a significant reduction in income generated by certain producers. Therefore, it can be said that financial constraints and credit market imperfections are major obstacles to investment, growth and poverty reduction in transition and developing countries (Dries and Swinnen, 2010). Bearing that in mind, in order to obtain a picture as complete as possible, the production value, variable and fixed costs for farms of different sizes are provided (Table 1).

Table 1. The average production value, variable and fixed costs per ha calculated in terms of the average prices for the period of 2009-2013 (base indices - farms of the size of up to 10 ha = 100)

Indicators	Farm size (ha)				
	up to 10 ha	**10-20 ha**	**20-30 ha**	**30-50 ha**	**50-100 ha**
Production value (RSD per ha)	100.0%	102.6%	103.1%	112.8%	125.5%
Variable costs (RSD per ha)	100.0%	102.1%	106.1%	115.7%	123.1%
Fixed costs without the costs of renting land (RSD per ha)	100.0%	64.8%	74.1%	64.9%	53.7%
Fixed costs with the costs of renting land (RSD per ha)	100.0%	130.6%	142.3%	146.5%	154.7%

Source: Authors` calculation based on the survey data.

It is evident that the variable costs per ha in the case of the largest farms are higher by 23.1% compared to the smallest farms, which indicates a higher input level on the largest farms compared with the smallest ones, which results in a higher realised average value of production per ha in the case of the largest farms.

As regards the fixed costs, it is well known pattern that their total amount at the level of farm does not change when the change in the level of production or degree of capacity use occurs, that is, their total amount remains the same regardless of the amount of products produced or services rendered (Gogić, 2009). However, their amount per ha of arable area significantly decreases in the case of the increase in farm size. Hence, the fixed costs calculated per ha of arable area in the case of the largest surveyed farms are lower by 46.3% in comparison with the smallest surveyed farms. However, the decline in the amount of

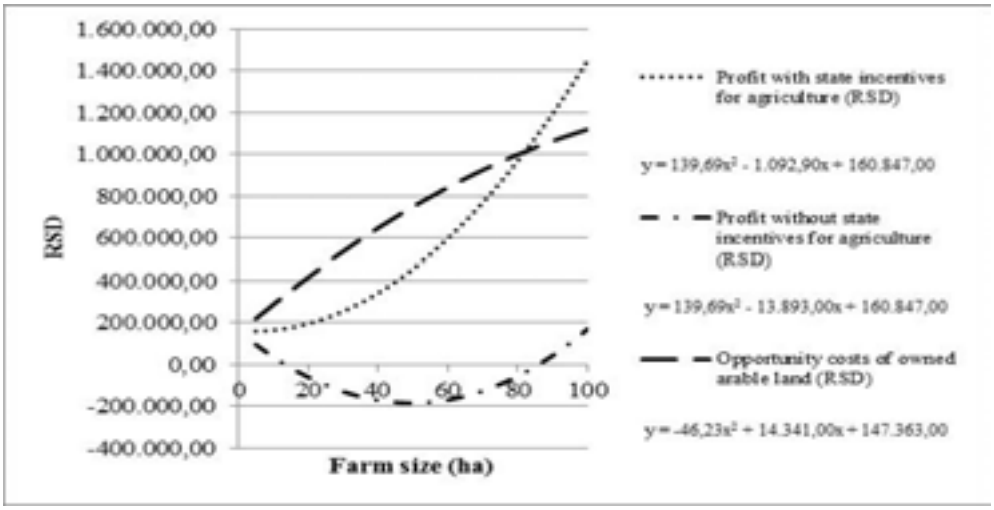
fixed costs per ha which occurs with increasing farm size is offset by the high costs of renting agricultural land, which rise with the increase in the farm size. More precisely, the costs of renting calculated per ha of total used arable land soar with increasing the farm size because the largest farms have a higher share of land rented compared to smaller farms. This causes the amount of fixed costs with the costs of renting land per ha of arable area on the largest farms to be higher by 54.7% compared with the smallest surveyed farms.

Based on the aforementioned, it can be concluded that the increase in the size of family farms and the change in the structure of crop production cause relatively high rate of the growth in production value and variable costs per hectare of arable area (input level), as well as a significant decrease in fixed costs (excluding the costs of renting land) per ha of arable land.

The trend of the previously discussed indicators of surveyed family farms depending on farm size affects the profitability of their business operation. In addition, the analysis of profitability is sensitive to the presence or absence of state incentives for agriculture. In this respect, family farms that are profitable can cease to be profitable when state incentives for agriculture are excluded from the calculation.

When including state incentives for agriculture, all surveyed farms (100%) are profitable. This could lead to a simple conclusion about the profitability of family farms directed at crop production. However, the fact is that when state incentives are deducted, it can be seen that the percentage of profitable family farms is significantly reduced. In that case, the only profitable farms are those of the size of up to 13.38 ha and farms of the size of over 86.06 ha, the farms between these two sizes are unprofitable (Graph 2).

Graph 2. Profitability of the surveyed farms with and without state incentives for agriculture



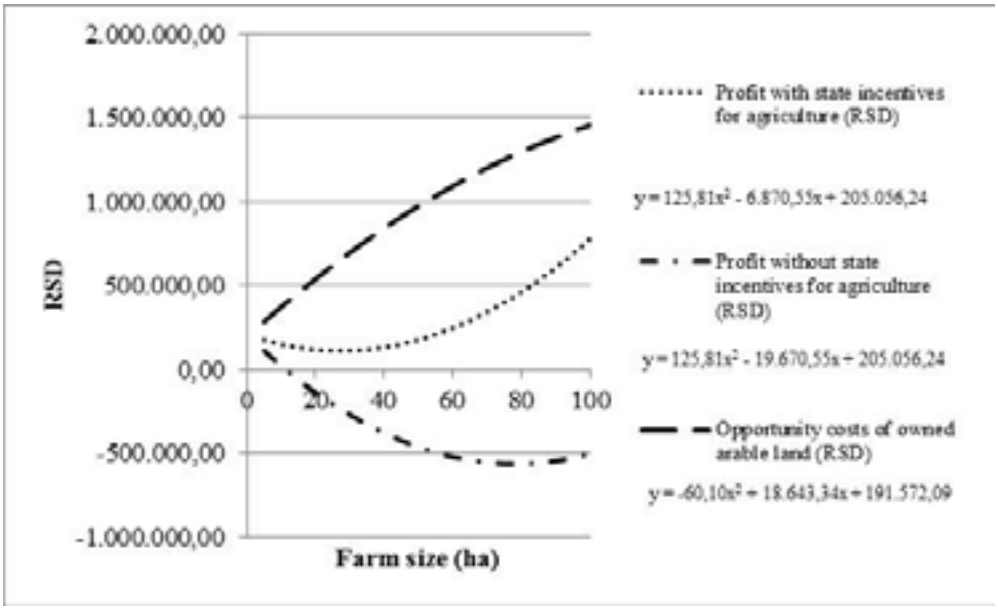
Source: Authors` calculation based on the survey data.

Given that each factor of production should make a return at the level of opportunity costs, the costs of their own land were evaluated by using regional averages. When it comes to its own land, if the family farm is a combination of land rented and owned, the amount paid for rent is applied to the land owned by assuming that the land rented and owned in the close vicinity, and therefore is of similar quality. If a family farm does not rent land, then the actual price of renting arable land to be paid by farmers in the observed region is applied to land owned. By applying this approach, the influence of the opportunity costs of their own land on the profitability of surveyed family farms was investigated.

By including the opportunity costs of their own resources (arable land owned) in the calculation, it can be seen that the percentage of profitable family farms is significantly reduced. In this case, without state incentives for agriculture surveyed farms are not profitable, whereas with state incentives for agriculture only the farms of the size of over 82.13 ha are profitable. This once again shows the importance of state incentives for agriculture for profitable operations of the surveyed farms. This raises the question whether in the case of the high costs of renting it is better for small farms to rent their land rather than to cultivate it.

Taking all the aforementioned into account, the effect of the price level of renting arable land on the profitability of family farms is examined. Given the current market trends it is unlikely that the costs of renting arable land in the next period will be lower. In this respect, the influence of the increase in the price of renting arable land by 30% on the profitability of surveyed family farms was examined (Graph 3).

Graph 3. The impact of the price of renting arable land (price rise of 30%) on the profitability of surveyed family farms.



Source: Authors` calculation based on the survey data

This shows the importance of state incentives for agriculture for a profitable operation of the surveyed farms. At the same time, it is in line with the research showing that state incentives related to production costs, have an increasingly important role in the operation of family farms directed at crop production (Todorović, 2010; Todorović and Filipović, 2010). Therefore, it is necessary to take this into account when designing agrarian policy in the future period.

It is very important to underline that the number of profitable farms would additionally and significantly decrease if their own resources (arable land owned) were evaluated and this particularly applies to those farms that have a high share of arable land owned in total used arable land (in the case of surveyed farms, these comprise the smallest farms). Bearing this in mind, the assessment of its own production resources, that is, resources owned by a family farm (arable land) was carefully considered because it is difficult to determine the potential income that would be generated by their alternative use. In order to highlight the effect of the opportunity costs, they are separated from other costs.

It was found that in the case of increasing the prices of renting arable land by 30% without state incentives for agriculture only farms that do not rent land will be profitable, and these are the smallest surveyed farms. However, they will be unprofitable if the opportunity costs of their own land are taken into account. However, with state incentives for agriculture all surveyed farms are profitable even in the case of the increase in the rent of agricultural land by 30%, but only if the opportunity costs of their own land are not taken into account. In the case of taking into account the opportunity costs of their own land, none of the surveyed farms will be profitable even with state incentives for agriculture. This only confirms the previous dilemma, that under the conditions of high costs of renting arable land, it is better to rent the land rather than cultivate it.

Conclusion

Based on the results of the conducted research, it can be concluded that the increase in the size of family farms and the change in the structure of crop production cause a relatively high rate of the growth in production value and variable costs, as well as a significant decrease in fixed costs (excluding the costs of renting land) per ha of arable land, which affects the profitability of operations. In addition, the analysis of profitability showed a great sensitivity to the presence or absence of state incentives for agriculture. In this respect, family farms that are profitable can cease to be when the state incentives for agriculture are excluded from calculation, which shows the importance the state incentives for agriculture have for profitable business operations of the surveyed farms.

By including the opportunity costs of their own resources (arable land owned) in the calculation of profit, it can be seen that the percentage of profitable family farms is significantly reduced. In this case, without state incentives for agriculture, surveyed farms are not profitable, whereas with state incentives for agriculture only farm of the size of over 82.13 ha are profitable. Furthermore, with state incentives for agriculture all surveyed farms are profitable even with the increase in the rent of agricultural land by 30%, but only if the opportunity costs of their own land are not taken into account.

The obtained results show that the survival of the majority of smaller family farms directed at crop production without state incentives for agriculture over the long term is called into question, especially if one takes into account the process of joining the EU, and the growing competition in the market.

References

1. Bartolini, F., Viaggi, D. (2013): *The common agricultural policy and the determinants of changes in EU farm size,* Land Use Policy, vol. 31, pp. 126–135, doi:10.1016/j.landusepol.2011.10.007
2. Blancard, S., Boussemart, J. P., Briec, W., Kerstens, K. (2006): *Short- and long-run credit constraints in French agriculture: adirectional distance function framework using expenditure-constrained profit functions,* American Journal of Agricultural Economics, vol. 88(2), pp. 351–364, doi:10.1111/j.1467-8276.2006.00863.x
3. Bogdanov, N., Božić, D. (2005): *Promene u posedovnoj i socio-ekonomskoj strukturi zemljoradničkih gazdinstava Srbije tokom perioda tranzicije*, u monografiji - Porodična gazdinstava Srbije u promenama, str. 91-109, Poljoprivredni fakultet Univerziteta u Beogradu, Beograd, Republika Srbija.
4. Bogdanov, N., Božić, D., Munćan, P. (2004): *Ocena efekata integracije u STO i EU na poljoprivredu Srbije*, Ekonomika poljoprivrede, vol. 51, br. 3-4, str. 249-256, Institut za ekonomiku poljoprivrede, Beograd, Republika Srbija.
5. Bojnec, Š., Latruffe, L. (2013): *Farm size, agricultural subsidies and farm performance in Slovenia,* Land Use Policy, vol. 32, pp. 207–217, doi:10.1016/j.landusepol.2012.09.016
6. Bošnjak, D., Rodić, V. (2011): *Zemljišni resursi kao faktor povećanja dohotka porodičnih gazdinstava u AP Vojvodini*, Ekonomika poljoprivrede, vol. 58, br. SB-2, str. 63-77, Institut za ekonomiku poljoprivrede, Beograd, Republika Srbija.
7. Bošnjak, D., Rodić, V. (2010): *Oranice u Srbiji, kapaciteti, razmeštaj način korišćenja*, Poljoprivredni fakultet Univerziteta u Novom Sadu, Novi Sad, Republika Srbija.
8. Božić, D., Munćan, P. (2007): *Family Farms – the Factors of Agricultural Development in Serbia*, u tematskom zborniku radova - Development of Agriculture and Rural Areas in Central and Eastern Europe, str. 221-230, Društvo agrarnih ekonomista Srbije, Novi Sad, Republika Srbija.
9. Dries, L., Swinnen, J. F. M. (2010): *The impact of interfirm relationships on investment: evidence from the Polish dairy sector,* Food Policy, vol. 35(2), pp. 121–129, doi:10.1016/j.foodpol.2009.11.005
10. Gogić, P. (2009): *Teorija troškova sa kalkulacijama: u proizvodnji i preradi poljoprivrednih proizvoda*, Poljoprivredni fakultet Univerziteta u Beogradu, Beograd, Republika Srbija.
11. Munćan, P. (2011): *Zavisnost dohotka porodičnih gazdinstava od veličine poseda i strukture ratarske proizvodnje*, Ekonomika poljoprivrede, vol. 58, br. SB-2, str. 51-61, Institut za ekonomiku poljoprivrede, Beograd, Republika Srbija.

12. Munćan P., Božić, D. (2013): *The effects of input subsidies on field of crop production in Serbia,* Economics of agriculture, vol. 60(3), pp. 585-594, IAE Belgrade.

13. Munćan, P., Božić, D., Bogdanov, N. (2010): *Ekonomska efikasnost proizvodnje ratarskih kultura na porodičnim gazdinstvima u AP Vojvodini*, Ekonomika poljoprivrede, vol. 57, br. 1, str. 15-24, Institut za ekonomiku poljoprivrede, Beograd, Republika Srbija.

14. Munćan, P., Živković, D., Jevtić, S. (1996): *Uticaj proizvodne orijentacije porodičnih gazdinstava ratarskog usemrenja na ekonomske rezultate*, u zborniku radova - Poljoprivredno domaćinstvo, obnova i razvoj sela, Zavod za sociologiju razvoja sela, Beograd, Republika Srbija.

15. Todorović, S. (2010): *Uticaj mera agrarne politike na ekonomski položaj proizvođača kukuruza u Republici Srbiji*, Zbornik radova sa konferencije - Prvi naučni simpozijum agronoma sa međunarodnim učešćem „AGROSYM Jahorina 2010“, Jahorina, Bosna i Hercegovina, str. 151–257.

16. Todorović, S., Filipović, N. (2010): *Economic analysis of wheat production on family farms,* Journal of Agricultural Sciences, vol. 55(1), pp. 79–87.

17. Todorović, S., Filipović, N. (2010): *Uticaj mera agrarne politike na ekonomski položaj proizvođača pšenice u Republici Srbiji*, u tematskom zborniku radova - Agrarna i ruralna politika 3 - Održivost agroprivrede, zadrugarstva i ruralnih područja, str. 61–68, DAES - Društvo agrarnih ekonomista Srbije i Poljoprivredni fakultet Univerziteta u Beogradu, Beograd, Republika Srbija.

18. Todorović, S., Filipović, N., Munćan, M. (2010): *Economic analysis of sunflower production on family farms in the Republic of Serbia,* Research Journal of Agricultural Science, vol. 42(3), pp. 833–837.

PROFITABILNOST PORODIČNIH GAZDINSTAVA USMERENIH NA RATARSKU PROIZVODNJU[5]

Petar Munćan[6], Saša Todorović[7], Mihajlo Munćan[8]

Rezime

Uspešnost u ratarskoj proizvodnji zavisi, s jedne strane, od ostvarenih prinosa i ostvarenih prodajnih cena (vrednosti proizvodnje), i s druge strane od učinjenih troškova proizvodnje. Na osnovu ovih podataka dolazi se do različitih ekonomskih pokazatelja kojima se iskazuje uspešnost poslovanja gazdinstva. Podaci o osnovnim parametrima proizvodnje prikupljeni su metodom ankete, koja je sprovođena poslednjih pet godina (2009-2013.) na odabranih 40 porodičnih gazdinstava veličine do 100 ha, razvrstanih u pet grupa, usmerenih isključivo na ratarsku proizvodnju sa područja dve opštine Južnobanatskog okruga. Efikasnost proizvodnje i racionalnost korišćenja raspoloživih resursa posmatranih porodičnih gazdinstava merena je izračunavanjem njihovog profita sa uključivanjem u obračun državnih podsticaja za poljoprivedu i vrednovanjem sopstvenih resursa angažovanih za proizvodnju.

Ključne reči: *profit, porodično gazdinstvo, ratarska proizvodnja, oportunitetni troškovi.*

5 Rad je rezultat istraživanja na projektu Ministarstva prosvete, nauke i tehnološkog razvoja Republike Srbije broj 179028, pod nazivom: „Ruralno tržište rada i ruralna ekonomija Srbije – diverzifikacija dohotka i smanjenje ruralnog siromaštva“.

6 Dr Petar Munćan, redovni profesor, Univerzitet u Beogradu, Poljoprivredni fakultet, Nemanjina 6, 11080 Zemun, Republika Srbija, Telefon: +381 11 2 615 315 / lok. 413, E-mail: muncan@agrif.bg.ac.rs

7 Saša Todorović, asistent, Univerzitet u Beogradu, Poljoprivredni fakultet, Nemanjina 6, 11080 Zemun, Republika Srbija, Telefon: +381 11 2 615 315 / lok. 406, E-mail: sasat@agrif.bg.ac.rs

8 Mihajlo Munćan, asistent, Univerzitet u Beogradu, Poljoprivredni fakultet, Nemanjina 6, 11080 Zemun, Republika Srbija, Telefon: +381 11 2 615 315 / lok. 406, E-mail: mmuncan@agrif.bg.ac.rs

Original scientific paper

Economics of Agriculture 3/2014
UDC: 368.5:323.333

AGRICULTURAL INSURANCE UNDER THE SOLVENCY II DIRECTIVE

Vladimir Njegomir[1], Rajko Tepavac[2], Miloje Obradović[3]

Summary

Solvency II Directive represents a new framework of unique solvency regulation of insurance and reinsurance companies in the European Union. Although it has not yet been implemented in national legislations, it can be concluded, based on the directive wording and conducted quantitative studies, that it will have implications on agricultural producers since they are the users of insurance services. The aim of the research presented in this paper is to analyse the implications of the new directive to agricultural producers since they are the insureds and the main actors of agribusiness. Firstly, the paper gives an overview of the basic features of the new regulatory framework and then it points at the issues and the needs for intensive application of Directive in order to improve the insurance business in Serbia. The process will direct the settlement of major claims, the ones that are typical of catastrophic risks in agriculture, towards the insurance, while the expectations from the government will be directed towards the regulation of the setting and economic measures (development and investment subsidies, cooperative movement). In addition, the paper points at the demands of the new regulation and analyses the implications of the new regulation regarding the settlement of claims resulting from major flood since it represents the example that proves the basic postulate.

Key words: *insurance, agricultural producers, catastrophic floods, claims and prevention in agribusiness, risk management, reinsurance, Solvency II.*

JEL: *G22, Q01*

1 Vladimir Njegomir, Ph.D., Assistant Professor, Faculty for Law and Business Studies Dr. Lazar Vrkatic, Bulevar oslobodjenja no. 76, 21000 Novi Sad, Serbia, Phone: +381 64 139 90 05, E-mail: vnjegomir@eunet.rs

2 Rajko Tepavac, Ph.D., Associate Professor, Business Academy, Cvećarska Street no. 2, 21000 Novi Sad and Dunav osiguranje, Makedonska Street no. 4, 11000 Belgrade, Serbia, Phone: +381 63 200 910, Email: tepavac92@gmail.com

3 Miloje Obradović, Ph.D., Associate Professor, Faculty of Engineering Management, Belgrade, Faculty of Engineering Management, Bulevar Vojvode Mišića no. 43, 11000 Belgrade and Assembly of the City of Belgrade, City Government, 27. marta Street no. 43, 11000 Belgrade, Serbia, Phone: +381 11 414 04 20, E-mail: miloje.obradovic@fim.rs

Introduction

Solvency implies long-term ability to settle all accrued liabilities, i.e. a solvent insurance company is the one which is capable in long-term to reimburse to the insured persons all damages, by their number and amounts, but also to meet all financial liabilities to government, employees, other insurance underwriters and re-insurance underwriters, to their maturity date (Njegomir, 2011b). Due to a fact that in insurance business, agricultural producers and other insured persons, owing to information asymmetry, are considered as a party which should be protected, the insurance regulation is inevitable. Taking into consideration that, by purchasing services of insurance cover, the agricultural producers basically buy a promise of future payment, a regulation of obligingness of solvency, as one of the basic economic principles of the insurance companies business, imposes as a necessity. If an insurance company would become insolvent, the agricultural producers would go through a financial insecurity, and would appear some social and economic costs, but the most important is that crops and fruits insurance, as well as other insurances, due to impossibility to insurance indemnity, would lose its meaning of existence and, from the agricultural producers point of view, it represents a protection of production risks. Also, the public confidence in insurance would be diminished or lost, which would manifest in decreasing demand for the insurance, while a negative impact of the loss would experience the insurance companies in Serbia during nineties of the 20th Century and the first few years of this century. Taking into consideration, in all managerial and business activities of the insurance companies, especially in activities of accepting the risk, provisioning of the insurance companies, risk transfer in re-insurance and investments, it is necessary to permanently reconsider a relation between a risk and a capital, at the aggregate level, in order to provide a continuous preservation of solvency position (Njegomir, 2006).

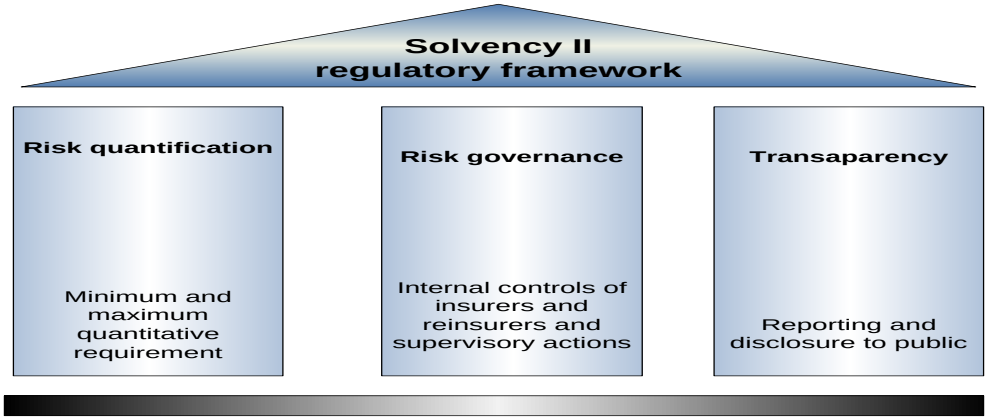
On the European Union level, at the moment, a current framework of solvency regulation (Solvency I) is in an alteration phase. Namely, directive Solvency II was adopted in 2009 and the directive's apply was initially anticipated for the year 2012. This directive represents a new regulatory framework, which will be of importance for the EU countries, as well as its future members, including Serbia. Taking into consideration a significance of insurance market within the EU member countries, Solvency II has already significant implications on solvency regulation in other countries, including especially Switzerland, Bermuda Islands and Japan. It follows the significance of researches carried out in the paper, which goal is to present implications review of new regulatory rules for the agricultural producers insurance. In the paper, we point out, at first, to basic requirements of the new regulatory rules and then their key implications.

Quantitative requirements Solvency II

The access provided by Solvency II regulatory framework and Swiss Solvency Test is the most acceptable form of regulation of the insurance companies activities, especially if there a need of financial groups regulation is taken into consideration, in regard that the countries which had provided such supervision, had no need to intervene aiming to save an insurance underwriter or an re-insurance underwriter, taking into consideration also problems of

the insurance group American International Group (Njegomir, 2011a). The Solvency II regulatory framework bases on three pillars (Njegomir, 2009) as we can see in picture 1. The first pillar represents quantitative requirements and the second and the third one are qualitative requirements. Possibility of using the three pillars structure, for regulation of insurance industry solvency as in Basel II, was implied in 2002 (EC and KPMG, 2002) and was adopted in March 2003 (EC, 2003).

Picture 1. Structure of Solvency II of regulatory framework based on three pillars



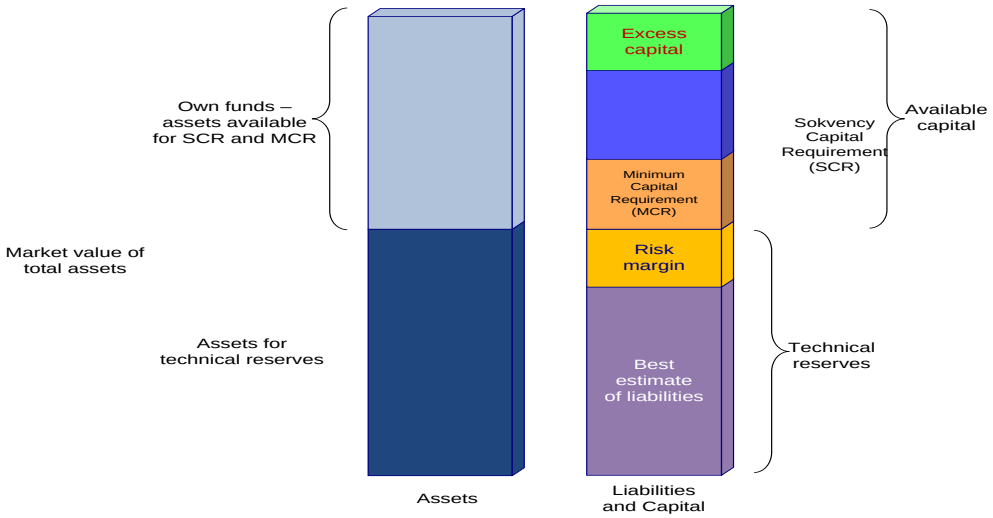
Source: Njegomir, 2009.

Regulatory determination of theoretical level of solvency determines also the solvency position of insurance companies in a specific legal system. Taking it into consideration, as a solvent insurance company can be considered the one which assets are higher than the theoretical solvency level, most often determined as a minimum and target capital requirement. A basic goal of capital requirements determination is establishment of a certain control level, which serves as a base for supervision of an insurance underwriter, aiming to protect an insured person, in case of agricultural insurances – agricultural producers. A control level can be determined in form of one or several capital requirements, for example, in form of a minimum and available capital requirement.

The available capital of an insurance or re-insurance company represents a difference between assets and liabilities, i.e. a market value of total assets and technical reserves (Picture 2), where, generally observed, a company is solvent if available capital is higher than zero, i.e. if there is a surplus of assets over the liabilities of a company. On the contrary, insolvency is a situation in which the available capital (AC) is less than zero, i.e. if the liabilities are higher than the total assets of a company. The solvency of insurance or re-insurance company is of essential significance for every agricultural producer and therefore for the total agricultural production. High quality of repair occurred in agriculture, typical by a small coefficient of capital turnover, provides a basic safety to an agricultural producer that his season has been saved and that the assumptions for the next production cycle have been made. Before we point out to differences in the level of the claimed capital, we emphasize that Solvency II regulatory framework has been based on the market evaluation of assets and liabilities,

unlike the existing regulatory framework which bases on accounting evaluation. There a fair value of assets and liabilities is represented, which generally implies a market value or its approximation. Expressing the assets position by the market value is not a problem, but it is for calculating the liabilities, especially in property insurance in agriculture, regarding that there is no market for liabilities of insurance and reinsurance companies, and thereby their market value. The positions of assets by activities types, where agro-sector makes one third of value, in registers of insurance companies concentrate by sub-systems, but a functional relation within a sub-system (e.g. agriculture, construction, etc.) is of the same principle as a macro-total level. With this in mind in assessing the value of liabilities of insurance and reinsurance companies use the concept of best estimate to which is added the risk margin, which represents the market value. The best assessment is defined and calculated as a net present value of future cash flows of insurance portfolio, where uses a risk-free rate of interest. For this reason adds a risk margin to a sum of the best evaluation of liabilities (Picture 2). The risk margin represents a cost of capital necessary in every year until the liabilities expire. The risk margin essentially calculates to protect an insured person, as an additional security measure of insurance and re-insurance companies.

Picture 2. Minimum (MCR) and solvency capital requirement (SCR)



Source: Njegomir, 2009.

The Solvency II regulatory rules, by the first pillar, which refers to quantitative requirements anticipates the existence of two capital requirements, a minimum capital requirement (MCR) and a solvent capital requirement (SCR), (Njegomir, 2009). The minimum capital requirement is a level of capital which represents a base for intervention of supervisory authorities. That is to say, if an insurance underwriter or a re-insurance underwriter does not dispose with enough capital anticipated by this requirement, the supervisory authorities apply measures like prohibition of entering into new contracts on insurance or revoking a licence. The existence of available capital on the level of a minimum capital requirement in short-term can provide a continuity in business, along with the possibility of risk transfer or recapitalization. Major

flood damages in May 2014 are a fact which confirms a need for risk transfer of catastrophic floods. Major damages surpass capital dimensions of an insurance underwriter and jeopardize his solvency, if the risk has not been split. As a premium pays in advance, non-payment to agriculture is, firstly, a great uncertainty for an insured person's expectations, for which he had insured, and secondly, insolvency of an insurance underwriter and loss of market and finally, high social and material costs in the field of agriculture (crop growing, livestock breeding, fruit growing, etc.) which must be compensated. In our case, the state's obligation to support agriculture appears cyclically as an imperative. Determination of the minimum capital requirements is determined in a similar way as in previous solvency regulations. The minimum capital requirement determines in an absolute amount, 2.2 million euro for every non-life insurance underwriters, i.e. 3.2 million euro in case that insurance underwriters deal also with auto-liability insurance businesses, responsibility for using aircrafts, responsibility for using crafts, general liability, credit and guarantee, 3.2 million euro for life insurers and 3.2 million euro for insurance underwriters, except a captive of a re-insurance underwriter for which has been determined the minimum capital requirement of one million euro.

Framework of method of applying a standard formula was given by the directive, where was determined that, in determination of a size of the solvent capital requirement, must be taken into consideration three elements: 1) basic solvent capital requirement in which determination must take into consideration non-life, life, health, market and credit risk, arising from the contractual obligations failing, 2) capital requirement for an operational risk, 3) correction for cover of unexpected losses, which can appear as a result of simultaneous decrease of technical reserves or deferred taxes or their combination. Calculation of the solvent capital can be expressed by the following formula:

$$SCR = BSCR + SCR_{op} - Adj$$

Where: *SCR* – solvent capital requirement, *BSCR* – basic solvent capital requirement, $SCR_{op}SCR_{op}$ – capital requirement for operational risk and *Adj* correction for covering possible losses, which can appear as a result of simultaneous decrease of technical reserves or deferred taxes or their combination (Njegomir, 2011c). In the stated formula, the basic solvent capital calculates as:

$$BSCR = \sqrt{\sum_{i,j} CorrSCR_{ij} x\ SCR_i x SCR_j}$$

$CorrSCR_{ij}CorrSCR_{ij}$ is a correlation stencil, i j unfold by all possible values – for the risk of non-life, life, health insurances and market and credit risk (Njegomir, 2011c).

The solvent capital requirement (SCR) is a level of capital, which an insurance underwriter and an re-insurance underwriter should possess, aiming to provide solvency under normal circumstances, and which is sufficient for covering unusually harmful events, like by Solvency II directive was determined, the events which happen once in two hundred years. It is about a target solvent requirement which should reflect risk of an insurance

or reinsurance company and as additional capital, above the level of minimum capital requirement, to ensure the unexpected losses cover. While determining the SCR should take into consideration all risks by which an insurance company has been exposed, i.e. insurance risks, market, credit and operational. Determination of the SCR amount bases on the principles which should illustrate economic reality of insurance and reinsurance companies business and which only point out desirable results, where assets for their achievements, a standard formula, an internal model or their combination, represent a subject of their free choice, with necessity of supervisory authority's approval. A measure which uses for determination of the SCR is VaR (Value at Risk), i.e. measure of value at risk, which determines for own funds of an insurance underwriter and a re-insurance underwriter on the confidence level of 99.5%, during a one year period. The value at risk (VaR) is a measure which summary expresses the hardest loss during the target time period with provided level of reliability (Jorion, 2001). Determining the value measure in risk on the reliability level of 99.5% essentially means that the solvent capital requirement bases on a size of capital, which should be provided in order to insure that an insurance- or an re-insurance underwriter's bankruptcy does not occur more than once in 200 cases, i.e. that the companies will be able, with probability of at least 99.5%, to fulfil their obligations to insured persons and insurance users in future 12 months.

Qualitative requirements Solvency II

The quantitative requirements is dedicated the most attention in regard to their significance for safety of an insured person. They are the most important for agricultural producers in regard that they directly guarantee the insurance indemnity, which is of crucial significance for continuity of agricultural production. However, the supervisory authorities will not implement monitoring of insurance and reinsurance companies adjustment only by checking the minimum and solvent capital requirement, but, as the clause 35 of the Directive (Directive 2009/138/EC) points out, also by evaluation of an insurance underwriter and an re-insurance underwriter's management system, activities they do, value principles which are applied in determination of solvency, risks they face, but also applied systems of risk governance, capital structure, needs and capital management. Also, by the clause 36 of the Directive, was determined to make an assessment of qualitative requirements in the supervision procedure, which refer to management system, risks assessment to which have been exposed the insurance and reinsurance companies or might have been exposed, and evaluation of ability of the companies, as subjects of supervision to assess risk-taking, taking into consideration the environment in which they do business. A control of any or sufficient insurance in agriculture is not present in Serbia, and as a first measure imposes an introduction of mandatory forms of insurance by activities or agricultural region or crop. Everything previously mentioned points out to a necessity of adequate understanding and adjustment of insurance and reinsurance companies business with the requirements of the second and the third pillar of Solvency II.

The second pillar represents the internal control and risk governance principles of an insurance underwriter and a re-insurance underwriter and principles on which determine

a framework for supervision of the internal controls and management practice with risk and capital, and adequacy of the insurance and reinsurance companies' capital (Njegomir, 2009). Aiming to adjust to the requirements of a new solvency regulatory framework, the insurance and re-insurance companies will have to apply the management system, which will include all business activities. An adequate system of corporative management (especially with companies and husbandries in the field of agriculture, since service activities have far gone in applying this model) should include a transparent organizational structure with a clear distribution of tasks and responsibilities and an efficient support of information systems to all business activities. By the clause 42 of the Directive was determined that the insurance and reinsurance companies must provide that persons which manage with companies or have key roles, fulfil two conditions at any time: a) that their professional qualifications, knowledge and experience are adequate in order to provide a regular and wise management, and b) to have a good reputation and integrity. The process of risk governance was anticipated by the clause 44 of the Directive, which requires from an insurance underwriter and an reinsurance underwriter to have a set effective system of risk governance, which consists of strategies, processes and reporting procedures necessary for a continuous identification, measuring, monitoring, managing and reporting on risks, they have been exposed to, or might be exposed to, and their inter-dependences, on individual and group level. In case that an insurance underwriter and an re-insurance underwriter use also a partly or a complete internal model of management with risk and capital, this function should perform also the following additional tasks: a) design and implementation of an internal model, b) testing and validation of an internal model, c) documentation of an internal model and all its changes, d) analysis of an internal model performances and making reports, e) informing on managerial structures on an internal model performances, suggesting improvements and notices on the previous efforts for improvement of identified weaknesses.

An actuarial role was determined by the clause 48 of the Directive. It was primarily directed to apply of methodologies and procedures for evaluation of technical reserves adequacy, adequacy of accepted risks in insurance cover, as well as the adequacy of reinsurance program. Quality of risk assessment in agriculture is actuarially very difficult to comprehend, because there is no statistical series, neither by the type of product, nor the region, so a base for an exact estimate is not adequate. It remains to apply different underwriting skills, typical for an investment activity, which can anticipate endurance by the catastrophic damages risk. A basic goal is to provide a thoughtful capital allocation and to improve business decision-making by applying superior means of identification and modelling of risk. By the clause 46 was specified that insurance and reinsurance companies should have set effective system of internal control. The system should involve administrative and accounting procedures, the internal control framework, organized reporting at all levels of insurance or reinsurance companies and a process of meeting the regulatory requests. The role of internal revision was determined by the clause 47 of the Directive. Within this role should be involved the evaluation of adequacy and effectiveness of the internal control system, as well as other elements of management system. A basic request for successful functioning of internal revision is its independence.

The third pillar of Solvency II often is called also „forgotten" (PricewaterhouseCoopers, 2010), although we consider this pillar very important to agricultural producers, as service users of insurance cover. This pillar refers to the market discipline, which primarily realizes by reporting and disclosing information to supervisory authorities, but also to the general public. The information, as damages trend (risk increase) in some activities as agriculture, due to the climatic disturbances and determination of all risk insurance package against such risks, should place on the market by those who do it. A regulator should request the information. On the other side, potential insured persons have to present the type and amount of damage they bear, not knowing the different. In that way creates a complete image (statistical, financial, and social) on a need of some insurance type, as it is now typical the types of insurance in agriculture. There are two types of regular information disclosing, requested by the Solvency II, a report to the supervisory authorities and a report on solvency and financial condition. The report to the supervisory authorities should have all information necessary for business supervisory of insurance and reinsurance companies, both in quantitative and qualitative sense, in accordance with the regulations of the clause 35 of the Directive. The report on solvency and financial condition is meant for the general public and, in accordance to the clause 50 of the Directive, should contain both qualitative and quantitative report. The quantitative report, which will submit to the supervisory authorities and will have the greatest implications to the organizational resources, will consist of several forms – if it is about an individual insurance or reinsurance company, the reporting forms will be (PricewaterhouseCoopers, 2011): 1) balance sheet, 2) assets – investments, 3) solvent capital request, minimum capital request and own means, 4) technical reserves – life insurances, 5) technical reserves – non-life insurances, 6) analysis of variations, state and cover, and 7) re-insurance, while it is about a group – it will be needed also consolidated reports, risk concentrations and internal transactions. Besides the regulatory report, by the Directive was also anticipated reporting the supervisory authority in case of realization of previously defined events (regulations within the clause 35 and 53 of the Directive) and mandatory reporting of the supervisory authority in case of these authorities' requests (in accordance to regulations of the clause 35 of the Directive).

Implications to risk governance

Own risk and solvency assessment

A special significance within the request of the second pillar Solvency II is a request that every insurance and reinsurance company within the risk management system must implement own evaluation of risk and solvency. For indicating the own assessment of risk and solvency uses a widely accepted abbreviation ORSA (Own Risk and Solvency Assessment). In compliance with the regulations of the clause 45 of the text Solvency II, this assessment should comprise at least: a) total needs for solvency provision, taking into consideration a specific risk profile, approved limits of tolerance to risk and business strategy of insurance underwriters or reinsurance underwriters, b) continuous adjustment to the capital requirements and requests which refer to the technical reserves, and c) assessment of significance for aberration of a concrete insurance underwriter or reinsurance underwriter's risk profile from assumptions which make a base of a solvent capital requirement. The own assessment of risk and solvency

requires implementation of adequate processes for identification and quantifying of risk. It is especially important from agricultural producers' point of view, in regard to peculiarities of agricultural production and all the risks that it entails. Also is necessary that insurance underwriters and reinsurance underwriters make an integral part of business strategy of their own risk assessment and solvency, and to apply it continuously in strategic decision-making. The assessment must be implemented without delay in case of changing the total risk profile of an insurance underwriter or reinsurance underwriter. The obligation of an insurance underwriter /reinsurance underwriter is to inform the supervisory authorities on the results of implemented risk and solvency assessment, in compliance with the regulations of the clause 35 of the Directive.

If own risk of catastrophic damages has not been assessed adequately in insurance and reinsurance companies, the occurrence of these damages can have very negative consequences to the solvency level or even lead to the solvency loss. In these conditions inevitably come to a direct income reduction, and thereby also to decrease of a legally legitimated capital, and often to a compulsory liquidation of financial and real property, so every liability under the insurance claims could be respected. Here is also an important an adequate assessment of operational risk, in regard to a fact that the occurrence of catastrophic damages in agriculture causes also a great number of the insurance claims, which requires increased operational readiness of insurance companies. Exactly due to this fact, theoreticians and practitioners, often put a question of involving the state in insurance and reinsurance activities in circumstances of increased probability of the catastrophic damages occurrences (in agricultural production). Some consider that there is necessary the state to be interfered in the process of insurance and reinsurance, they even consider it is justified also the request of the insurance companies for such intervention, some others completely deny this intervention justification. Experiences in past ten years show that the role of the state has become necessary in regard to catastrophic amount of damages, especially in agricultural production, and which cannot be absorbed by the insurance and reinsurance market. The quality assessments of this kind of risks determine some other thesis, that dividing risk and/or export by a stop loss method provides to an insurance underwriter to settle damage without the state's support. The state is left to combine by itself the infrastructure insurance (or alone bears the risk and damage), while an agricultural or other insured person cannot insure.

Risk transfer in terms of Solvency II

The results of the fifth quantitative study of Solvency II Directive impact to the insurance companies business show a significant increase of necessary capital amount. It is expected, taking into consideration that determination of quantitative claims bases on a need to provide capital for cover of all risks, not exclusive focusing to the insurance risk. It remains an open question how much will cost the insurance, for example in agriculture, where damages are caused successively, a technical result is low and dispersion requires also a premium division. If agro-business does not fall into a high-profitable activity, but it endures a high share of sociality, expensive risk insurance with a high degree of risk is heavily endured by its balance. Although the results of this study (EIOPA, 2011) point out that, in regard to the current state, by implementation of Solvency II can be expected for the entire insurance

sector a decrease of capital surplus for around 121 milliards euro and increase of the claimed capital for ensuring the solvent capital requirement for around 320 milliards USD, there can be expected decrease of solvency ratio from 310% of realized within the regime of Solvency I to 165%. So, Solvency II, if the insurance sector is observed as a whole, will cause increase of necessary capital, which will cause an increased need for all reduction mechanisms of a regulatory claimed capital, and which will particularly manifest in case of smaller and specialized insurance companies, due to the limited possibilities of risk diversification. A special significance will have mechanisms of risk transfer, primarily reinsurance, but also the alternative mechanisms.

Reinsurance, as insurance of the insurance, had a key significance in providing additional capacity for acceptance of insurable catastrophic risks, with an emphasis on the risks due to meteorological disturbance, especially if takes into consideration that it is about the international character businesses, which implicates to a fact that the cover does not limit only to the available capacity of insurance and reinsurance market within the state (Njegomir, 2008). However, lately the capacity of the entire world reinsurance market had become limited and insufficient in complete claims settlement of the insurance companies for the risk transfer. The alternative solutions appear which enable transfer of the insurance risk, like flood, for example. Such risks as the credits for construction of agro-facilities, mechanization, and new plantations have been activated by damage occurred in a main activity, by flooding a basic resource in form of sown areas. Traditionally present relation, an insured person-an insurance underwriter-a reinsurance underwriter, increasingly changes its form, so the traditional demarcation line between an insurance underwriter, a reinsurance underwriter and a capital market is becoming less significant.

A current application of the alternative mechanisms of the insurance risk transfer is relatively limited in comparison to the reinsurance, primarily due to inadequate regulatory treatment. However, Solvency II Directive endeavours to give priority to economic essence over the form, which will provide the application of all forms of risk management and will implicitly provide a faster development of the alternative mechanisms of insurable risks transfer. That is to say, in the clause 101 of the Directive (Directive 2009/138/EC) was stated an extraordinary broad interpretation of the risk transfer mechanisms, which recognize in calculation of capital claims in the following way: „in the calculation of the solvent capital requirement, the insurance and reinsurance companies should take into consideration an effect of the risk reduction techniques, taking care that a credit risk and other risks which result from using such techniques, must be adequately reflected in the solvent capital requirement.“ Thereby, by the clause 13 of the Directive is specified that, under the techniques of the risk reduction are implied „all techniques which provide to the insurance and reinsurance companies to transfer a part or all risks to other subjects“. The only inevitable for different forms of the risk transfer to be treated on the same basis as the traditional reinsurance is that the insurance companies quantify a real contribution of different instruments to the material risk reduction. Therefore is needed a precise recognition and objective reporting (third pillar) on a preventive performance, as well as the quality and a size of the preventive investments (e.g. in anti-hail rockets), which makes

the insurance purpose objective and justifies its price. By equal recognition and treatment of all mechanisms of the risk transfer – reinsurance, hedging and securitization, requesting from an insurance underwriter only a proof on their real contribution to the risk reduction, Solvency II framework will, unlike Solvency I, within which, in reduction of the capital requirements recognizes just reinsurance as a form of the risk reduction, will give a boost to the insurance underwriters for optimization of the risk reduction means and development of the alternative mechanisms of the risk transfer, as it is securitization.

Implications to investment activities

The traditional basic role of the insurance companies is providing the insured persons' safety from harmful consequences of the insurable risks realization. However, thanks to specificities of the insurance activities, which implies the existence of time gap between the moment of a premium payment and the moment of insurance indemnity, if comes to its realization, the insurance companies form significant insurance reserves which enable to show on the financial markets as the institutional investors (Tepavac, 2009).

The previous regulatory framework of solvency in the EU, as well as the solvency regulations outside the member-countries, including also the regulation in Serbia, had no significant impact to the investments. That is to say, the investment risk has not been taken into consideration in determination of the required capital for ensuring the solvency, but has been considered solely in the context of regulating the technical reserves means investments. The Solvency II will enable clearing away the noticed imperfections of the existing regulatory rules, primarily in domain of the risk cover during determination of the required capital amount. In regard to significant amount of assets in an investment portfolio of the insurance companies, as well as a fact that they become more and more significant institutional investors, including this risk will have significant implications to determination of the required capital amount. Investing in agricultural production along with the adequate risk assessment of production and along with use of the adequate preventive, there can be positively affected to determination of the required capital. Potentially the most important influence of a new regulatory framework Solvency II will be in domain of including all the risks, i.e. not only the insurance risk but also market and investment risk, credit and operational risk in determination of the required capital amount. By including an investment risk in determination of an insurance underwriter's capital adequacy determination Solvency II will unavoidably have the influence to the investment activities of the insurance and reinsurance companies. By this opens a space for more significant investment in agricultural production. Taking into consideration the investment risk will affect the insurance underwriters to place the available assets of technical reserves more cautious, which will imply placement in less risky financial instruments, as bonds and avoiding the risky financial instruments, as shares, or will have to possess the additional capital, in a way to support the investment risk. Especially stressed impact of investment risk will be in domain of long-term character insurance, like the investments in agricultural production, life insurance and liability insurance. The investment risk impact is especially emphasized taking into consideration that it had represented proportionally the biggest risk component in applying a standard formula in calculation of the solvent capital claim within the fifth quantitative study (EIOPA, 2011).

The market value of assets and liabilities will represent a base in determination of solvency position, which will implicate a need for having an adequate capital amount, which will reflect short-term changes in evaluation of assets positions value. All previously stated implicate that Solvency II will change a focus of the insurance companies from long-term to short-term incomes (MSRE and Oliver Wyman, 2010), which will inevitably cause a need for change in the investment placement structure. The change of valuation of assets and liabilities position from the accounting to the market value, as well as a need for allocation of capital to cover a short-term variability in the market value of some placements, will inevitably lead to pre-orientation of the insurance companies investment strategies, which will consequentially cause changes in supply and demand for some financial instruments (Fitch Ratings, 2011). The direction of change, in any case, will depend on the existing structure of an insurance underwriter's investment portfolio, as well as of the level of the financial markets development.

Implications to other business activities

The Solvency II will cause the changes regarding the risk reduction, which will lead to the income reduction or to a need for increasing the costs of complementary capital obtaining. Besides the costs of the complementary capital obtaining or application of measures which will have similar negative effects to profitability, the insurance and reinsurance underwriters will inevitably have also increased costs directly connected to adjustment to the requirements of Solvency II. It is about the costs which include development of internal models, human and material resources necessary for own and capital risk assessment, for the need of increased volume and quality of reporting the supervisory authorities and disclosure of information to the public.

A need for the complementary capital, due to increasing catastrophic damages, will inevitably encourage also the activities of managers and acquisition, i.e. merging and annexing the insurance and reinsurance companies in that way will increase the capacities for paying great damages, predominantly in agriculture because of the climatic disturbances and the environment changes (Njegomir et al., 2013). The initiators of these activities will be primarily small insurance and reinsurance underwriters with limited possibilities of the complementary capital obtaining. The activities of managers and acquisitions are more certain in non-life insurances, in regard that the potential effects of diversification are more expressed in case of property insurances and liability insurances. By the fifth quantitative study was determined that the effects of diversification can be significant and to reduce a necessary amount of capital for obtaining the regulatory claimed solvency, even for 25%-35%. The evaluation is that a composite insurance underwriter will have for about one third more benefits from diversification in regard to the specialized insurance underwriters, i.e. the insurance underwriters which deal only with non-life or only with life insurances (MSRE and Oliver Wyman, 2010). All previously mentioned will surely be an additional motive for consolidation on the insurance and reinsurance market, but also redefining a relation to the insured persons by types of insurance, especially for the activities which change human health, nutrition, temperature, the amount of shallow water, and which damages are no longer a series of small losses, but consolidated (as well as the capital).

Besides the changes regarding the consolidation, on the insurance market can be expected also the internal organizational changes. It is possible to expect that the insurance underwriter will aspire to realize the diversification effects aiming to optimize the capital structure, efficiency of capital use with the ultimate goal of realizing the greater economic effects for owners of capital. As a consequence of these efforts is possible development of an internal reinsurance, which will enable the transfer of all risks within the group to one internal reinsurance underwriter. On the other hand, it is possible to expect the consolidation within the insurance groups, by consolidation of branches into one legal entity, by which can realize, besides the capital, significant strategic and operational advantages. The other internal organizational changes are possible, too. The European Commission (EC, 2010) research, implemented in the period between November 2010 and January 2011, showed the expectation that the insurance companies of an independent company within the group will transfer in branches aimed to reduce administrative costs and capital costs. The reduction of these costs is possible by recognizing the greater diversification effects, simpler treatment of reinsurance within the group and the existence of small-scale restrictions on the transfer of capital.

Some types of the insurance cover can become non-profitable for the insurance underwriters, thanks to the higher capital claims, and thereby new regulatory rules can cause their disappearance in regard that the insurance underwriters can stop selling or significantly reduce it. The insurance of crops and fruits and animal insurance fall in very risky insurances in which the insurance companies realize negative results, especially when it is about Serbia, where damage ration in these types of insurance is almost 100%. If we add to such high ratio relatively high administration and acquisition costs, a combined ratio probably surpasses 100%, which implicates that collected premium in these insurances is not sufficient for the insurance indemnity and other costs. This would have resulted with non-insurability of some risks, which would be harmful for individual agricultural producers, insurance companies, but for the economy and the entire society, too. Taking it into consideration, it is reasonable to expect that the insurance companies will find methods for overcoming the increased capital claims.

Conclusion

The existing regulatory framework of solvency on the European Union level, very similar to the regulatory framework in Serbia, is in a phase of explicit changes towards implementation to principle-based regulations. Although a precise date has not been yet determined, by repeatedly changed, current speculations are that the directive implementation will start in 2015 or 2016; there is expected that Solvency II, as a new frame of insurance companies solvency regulations on the EU level will have significant consequences to governance and business of the insurance companies, which are facing a new challenge of taking positions towards the insurance in agriculture with insufficiently developed consciousness on possibilities of insurance, inadequate price and increasing need for a capital, due to increasing risks and costs of supervision of this type of risk.

Regulation based on applying the principles orders increasing responsibility to regulated subject regarding an adequate governance system, as well as carrying out all business activities in a way to provide an adequate size of capital, taking into consideration peculiarities of some insurance underwriters' business activities, the regulation subjects. Reorientation of insurance companies business will be necessary especially in domain of risk and capital governance, as key determinants of long-term success of the insurance companies. Also, a total governance system, especially in the field of risk and capital governance, will become much more transparent and directed to establishment of management culture, which will provide a solvent and profitable business with adaptability to new situations on the market, instead of the previous orientation to coordination to the regulatory requirements.

Taking into consideration all characteristics and implications of new regulatory framework we consider that, in spite of some costs and efforts, aiming to adjust to changes, its application will result with significant increase of an insured person's safety. New regulatory rules will mean a better certainty for agricultural producers regarding damage reimburse in case of production risks. However, a threat of new regulatory rules is present, owing to higher risk and high combined ratio in insurance of agriculture, that it can impose to agricultural producers higher insurance premiums or even to limit services availability of the insurance cover. We think that, by limiting supply of insurance services would be counter-productive, as in economic sense for the agricultural producers and insurance companies, as well as in a broader, social sense, in regard to agriculture development, such important activity, would be substantially limited and in disadvantage position. In that sense, we think that the insurance companies will find ways for adequate management of agricultural risks, as well as investing a part of assets from the technical reserves cover in agriculture and different preventive interventions, in own interest and in interest of agricultural producers, but also by relaxing a broader social community with enforced liabilities, accepted by it, because no one can, due to market under development and consciousness on insurance.

Literature

1. *Consultation on the Level 2 implementing measures for Directive 2009/138/EC on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II),* DG Internal Market and Services, Insurance and Pensions Unit, European Commission, Brussels, November 2010.
2. *Directive 2009/138/EC of The European Parliament and of the Council of 25 November 2009 on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II),* Official Journal of the European Union L 335, Brussels, 17.12.2009.
3. EC (2003): *Design of a future prudential supervisory system in the EU – Recommendations by the Commission Services*, MARKT/2509/03–EN, European Commission, Internal Market DG, Brussels, 3 March 2003.
4. EC and KPMG (2012): *Study into the methodologies to assess the overall financial position of an insurance undertaking from the perspective of prudential supervision*, European Commission and KPMG, Contract no: ETD/2000/BS-3001/C/45, May 2002.

5. EC (2006): *Amended framework for consultation on Solvency II*, MARKT/2515/06, European Commission, Internal Market DG, Brussels, April 2006.
6. EIOPA (2011): *Report of the fifth Quantitative Impact Study (QIS5) for Solvency II*, European Insurance and Occupational Pensions Authority, Frankfurt.
7. FitchRatings (2011): *Solvency II Set to Reshape Asset Allocation and Capital Markets*, Insurance Rating Group Special Report, FitchRatings, New York.
8. Jorion, P. (2001): *Value at Risk: The New Benchmark for Managing Financial Risk*, McGraw- Hill, New York.
9. MSRE and Wyman, O. (2010)*: Solvency 2: Quantitative & Strategic Impact: The Tide is Going Out*, Morgan Stanley Research Europe and Oliver Wyman, September 22, 2010.
10. Njegomir, V. (2006): *Specifičnosti upravljanja kapitalom u osiguravajućim društvima*, Računovodstvo, Vol. 50, No. 7-8, str. 59-68.
11. Njegomir, V. (2008): *Uloga tržišta kapitala u upravljanju rizikom osiguranja*, Industrija, Vol. 36, No. 4, Ekonomski institute, Beograd, str. 95-118.
12. Njegomir, V. (2009): *Solvency II direktiva i njen uticaj na upravljanje rizikom u osiguravajućim društvima*, Finansije, Vol. 64, No. 1-6, str. 272-306.
13. Njegomir, V. (2011a): *Sistemski rizik i osiguranje*, Računovodstvo, Vol. 55, No. 1-2, Beograd, str. 89-114.
14. Njegomir, V. (2011b): *Osiguranje*, Ortomedics book, Novi Sad.
15. Njegomir, V. (2011c): *Osiguranje i reosiguranje: tradicionalni i alternativni pristupi*, Tectus, Zagreb.
16. Njegomir, V., Tepavac, R., Počuča, M. (2013): *Kapaciteti sektora osiguranja i reosiguranja:implikacije katastrofalnih šteta,* Medjunarodna politika, vol. 64., no. 1149, pp. 137-156, Institut za međunarodnu politiku i privredu, Beograd.
17. PricewaterhouseCoopers (2010): *The forgotten pillar: Time to bring disclosure onto the radar*, PricewaterhouseCoopers, London.
18. PricewaterhouseCoopers (2011): *Risk of Delay: Getting Pillar 3 on Track*, PricewaterhouseCoopers, London.
19. Tepavac, R. (2009): *Institucionalni investitori na finansijskom tržištu*, Filip Višnjić, Beograd.

UPRAVLJANJE I POSLOVANJE OSIGURAVAJUĆIH DRUŠTAVA U USLOVIMA SOLVENTNOST II DIREKTIVE

Vladimir Njegomir[4], Rajko Tepavac[5], Miloje Obradović[6]

Rezime

Direktiva Solventnost II predstavlja novi okvir jedinstvene regulacije solventnosti osiguravajućih i reosiguravajućih društava na nivou Evropske Unije. Iako još uvek nije implementirana u nacionalna zakonodavstva, na osnovu teksta direktive i sprovedenih kvantitativnih studija, može se zaključiti da će ona imati implikacije na poslovanje poljoprivrednih proizvođača kao korisnika usluga osiguranja. Cilj istraživanja prezentovanih u radu jeste analiza implikacija na poljoprivredne proizvođače kao osiguranike i nosioce agrobiznisa. U radu je prvo dat pregled osnovnih karakteristika novog regulatornog okvira sa osvrtom na ambijent problema i potreba intenzivne primene kriterijuma iz Direktive kao puta za rešavanje unapređenja delatnosti osiguranja u Srbiji. Isti proces će pitanja rešavanja velikih šteta,tipičnih za katastrofalne rizike u poljoprivredi, usmeriti na osiguranje a očekivanja od države usmeriti ka regulativi pravljenja ambijenta i ekonomskim merama (subvencije za razvoj, ulaganja, zadrugarstvo). Zatim je ukazano na zahteve koje nameće nova regulativa i konačno analizirane su implikacije nove regulative uz pritisak rešavanja šteta od velike poplave kao primera koji dokazuje osnovnu postavku.

Ključne reči: *osiguranje, poljoprivredni proizvođači, katastrofalne poplave, štete i preventiva u agrobiznisu ,upravljanje rizikom,reosiguranje, Solventnost II.*

4 Vladimir Njegomir, Ph.D., Docent, Fakultet za pravne i poslovne studije dr Lazar Vrkatić, Bulevar oslobodjenja 76, 21000 Novi Sad, Srbija, Telefon: +381 64 139 90 05, E-mail: vnjegomir@eunet.rs

5 Rajko Tepavac, Ph.D., Vanredni profesor, Privredna akademija, 21000 Novi Sad, Cvećarska 2 i Dunav osiguranje, Makedonska 4, 11000 Beograd, Srbija, Telefon: +381 63 200 910, E-mail: tepavac92@gmail.com

6 Miloje Obradović, Ph.D., Docent, Fakultet za inžinjerski menadžment, Bulevar vojvode Misica 43, 11000 Beograd, Skupština grada Beograda, Gradska uprava, 27. marta 43, 11000 Beograd, Srbija, Telefon: +381 11 414 04 20, E-mail: miloje.obradovic@fim.rs

Original scientific paper

Economics of Agriculture 3/2014
UDC: 338.48-44(1-22)

COMPETITIVENESS OF DESTINATIONS WITHIN THE RURAL TOURISM CLUSTER: ZLATAR, ZLATIBOR

***Sanja Pavlović*[11], *Gordana Čavlin*[22]**

Summary

Cluster analysis is gaining increasing importance in the contemporary development of tourism. These are mostly areas that have similar tourist values. This paper presents the competitiveness of tourist destinations in the cluster of rural tourism Zlatar, Zlatibor, as defined in the Master Plan for Sustainable Development of Rural Tourism in Serbia. Having used AHP (Analytic Hierarchy Process) criteria pairs have been first compared, and then the alternatives (villages of Zlatar and Zlatibor). The seven criteria used in this paper are the following: factors and attractors, accessibility and infrastructure, accommodation facilities, unemployment, experience in rural tourism, proximity of the marketplace, and seasonality. The AHP method has been used to determine relations between the influence factors and the dominance of one factor in relation to another.It has been noted a relatively weak dominance of the villages of Zlatibor, by all criteria, except when it comes to unemployment, which is dominated by the villages of Zlatar.

Key words: *rural tourism, competitiveness, cluster, Zlatar, Zlatibor*

JEL: *C38, L83*

Introduction

A universal program of development of rural areas does not exist because it depends on the characteristics of a particular area. Therefore, the condition for the development of a model of development in rural areas is the adequate regionalization, based on comparative advantages and analysis of indicators of development and quality of life (Todorović, Štetić, 2009).

The development of rural tourism should be focused on expansion, differentiation and unification, while the implications will be reflected in the growing competition, forming of partnership alliances, more effective marketing, and sustainable tourism policy. In practice,

1 Sanja Pavlović, Ph.D., Assistant professor, University of Belgrade, Faculty of Geography, Studentski trg 3/III, 11000 Belgrade, Serbia, Phone: +381 64 258 84 68, E-mail: spavlovic20@gmail.com

2 Gordana Čavlin, mr. sci. oecc., Provincial Secretariat for Health and Social Affairs – Novi Sad, Department Subotica, Serbia, Phone: +381 62 884 87 36, E-mail: goca.cavlin@gmail.com

integrated management contributes to the achievement of sustainable rural development (Štetić et al., 2013).

The aim of bringing the attractiveness and competitiveness together is to facilitate investment in what tourists are most interested in, and it is of mutual interest to both tourists and residents. The competitiveness of a tourist destination is its ability to increase its attractiveness in accordance to the requirements of tourism demand, which will also be reflected on the increase in tourism spending. If development of a rural tourism destination is directed in this way, its long-term competitiveness could be achieved (Vuković et al., 2010).

Clusters are gaining increasing importance in both theoretical and practical contexts of the contemporary tourism development, taking into consideration the geographic concentration of related companies, suppliers, service providers, who simultaneously cooperate and compete with each other. In tourism, clusters are subareas or micro-destinations within a tourist region, which have similar tourist values (Todorović, Štetić, 2009).

Master Plan for Sustainable Development of Rural Tourism in Serbia (2011) has distinguished 12 clusters of rural tourism. These clusters are grouped into four groups of clusters of rural tourism, with respect to synergy and proximity of one or more clusters. In the group of rural tourism clusters in Central and Western Serbia the following clusters are distinguished: Golija, Zlatar, Zlatibor, Kopaonik, and Central Serbia.

The second group of clusters consists of the South Banat and Donje Podunavlje, the third group of clusters (Eastern Serbia) includes the following clusters: Sokobanja, Eastern Serbia and South-Eastern Serbia. The fourth group of clusters (Vojvodina) comprises the following clusters: Fruška gora, Gornje Podunavlje and Northern Vojvodina.

Research Methodology

One of the methods for comparing and ranking alternatives (in this paper, destinations within the rural tourism cluster Zlatibor, Zlatar) is a method of AHP (Analytic Hierarchy Process). It is based on a comparison of alternatives in pairs. Analytic Hierarchy Process was developed by Thomas L. Saaty (1990), when he separated the components: goal, criteria and alternatives and linked them into a model, in which the goal is at the highest level, while criteria (and sub-criteria, if there are any) are at a lower, and the alternatives at the lowest level. It is necessary to determine the relative importance of the two criteria in the AHP method, i.e. compare the importance of all pairs of criteria, assigning them the value of the claims presented in Table 1. The selection of claims signifies appropriate quantification of the weight of criteria. The AHP method is flexible because it allows the relations between influencing factors to be distinguished on the basis of examples of various criteria and alternatives, and also recognizes their explicit or relative influence and importance in real-world conditions and determines the dominance of one factor over another.

The aim of this paper is to highlight the importance of the method of multi-criteria analysis in relation to the assessment of the competitiveness of rural tourism destinations. With the aim of the paper being defined in this way, a hypothesis can be deduced: by using the criteria defined by the World Tourism Organization and the multi-criteria analysis it is possible to identify a hierarchy of villages of Zlatibor and Zlatar mountains within the context of the development of rural tourism.

Table 1.Relative scores of pairs of attributes at one hierarchical level (Saaty's scale*)*

Importance	Definition	Explanation
1	Equal importance	Two elements are of identical importance in respect to the objective
3	Weak dominance	Experience or judgment slightly favorites one element over the other
5	Strong dominance	Experience or judgment significantly favorites one element over the other
7	Demonstrated dominance	Dominance of one element confirmed in practice
9	Absolute dominance	Dominance of the highest degree
2, 4, 6, 8	Inter-values	Necessary compromise or further division

Source: Saaty, T. L., 1990.

Research Results and Discussion

In order to determine the priorities for development in comparison with other clusters of rural tourism in the Master Plan for Sustainable Rural Tourism in Serbia (2011) the following criteria, which affect the quality management of rural areas, have been applied:

1. concentration of factors and attractors and the potential of a cluster to develop a diversified offer in rural tourism;
2. seasonality is observed by concluding whether the cluster provides a year-round tourist offer;
3. accessibility and infrastructure with regard to the access and movement possibilities within the cluster;
4. the proximity of the marketplace;
5. unemployment defined in relation to the percentage of the unemployed in the total active population, taking into account that a high proportion of the unemployed should be given priority in the development of rural tourism;
6. accommodation facilities;
7. experience in rural tourism of each cluster in the development and management of tourism.

The same criteria have been applied in the analysis of the competitiveness of villages on Zlatibor and Zlatar mountains, which are located in the cluster of rural tourism Zlatar, Zlatibor. Initially, the assessment of the priority of the attributes (criteria) has been done by comparing their pairs, with the K1 being factors and attractors, K2 seasonality, K3

accessibility and infrastructure, K4 proximity of the marketplace, K5 unemployment, K6 accommodation facilities, and K7 experience in rural tourism.

Table 2. Assessment of priorities of attributes (criteria) – comparison in pairs

	K1	K2	K3	K4	K5	K6	K7
K1	1,00000	7,00000	2,00000	6,00000	4,00000	3,00000	5,00000
K2	0,14286	1,00000	0,16667	0,50000	0,25000	0,20000	0,33333
K3	0,50000	6,00000	1,00000	5,00000	3,00000	2,00000	4,00000
K4	0,16667	2,00000	0,20000	1,00000	0,33333	0,25000	0,50000
K5	0,25000	4,00000	0,33333	3,00000	1,00000	0,50000	2,00000
K6	0,33333	5,00000	0,50000	4,00000	2,00000	1,00000	3,00000
K7	0,20000	3,00000	0,25000	2,00000	0,50000	0,33333	1,00000
∑	2,59286	28,00000	4,45000	21,50000	11,08333	7,28333	15,83333

Source: research results based on the criteria of the Master Plan for Sustainable Rural Tourism in Serbia (2011) and empirical experience.

When comparing, for each pair of criteria (starting from K1 and K2, for example) the value of a criterion's significance in relation to the other one should be entered. At position (K2, K1) in the matrix of the results of comparison, i.e. at the position of the section lines between K2 and K1 columns the value 1/7 has been entered, which means that abstract factors (criterion K1) have exhibited dominance, confirmed in practice, in relation to the seasonality (criterion K2), which puts them in a reciprocal relation.

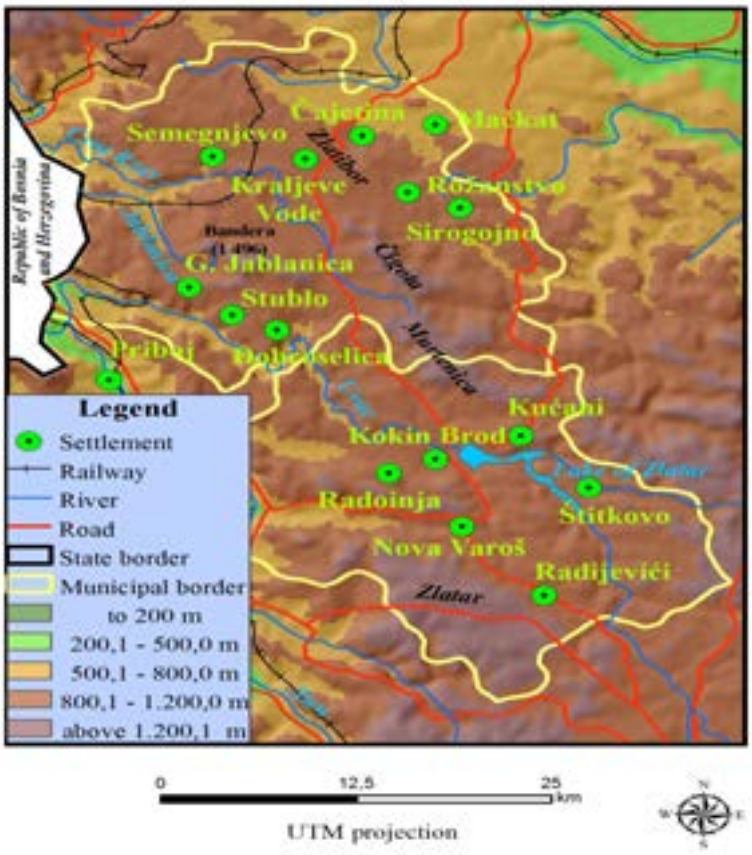
The values of the elements (criteria) by columns are summarized and the sum (Σ) is calculated (Table 2.). Each number in Table 2 is divided by the value of the column sum in which it is located. For example, the first value in Table 2. (1) is divided by the sum of the column K1 (2.59286), then the value 0.14286 is divided by 2.59286, and so on. Other values are calculated in the same way in Table 3. Then values of each row in Table 3 are summarized and the median value for each row is determined (Σ = W / 7). These median values are also found in Table 11 and are used to obtain the criterion function by multiplying the value for the given criterion with the obtained weight of the criterion.

Table 3. Median value of each row (assessment of priorities of attributes)

	K1	K2	K3	K4	K5	K6	K7	∑	W =∑/7
K1	0,386	0,250	0,449	0,279	0,361	0,412	0,316	2,453	0,350
K2	0,055	0,036	0,037	0,023	0,023	0,027	0,021	0,223	0,032
K3	0,193	0,214	0,225	0,233	0,271	0,275	0,253	1,662	0,237
K4	0,064	0,071	0,045	0,047	0,030	0,034	0,032	0,323	0,046
K5	0,096	0,143	0,075	0,140	0,090	0,069	0,126	0,739	0,106
K6	0,129	0,179	0,112	0,186	0,180	0,137	0,189	1,113	0,159
K7	0,077	0,107	0,056	0,093	0,045	0,046	0,063	0,488	0,070
∑	1,000	1,000	1,000	1,000	1,000	1,000	1,000	7,000	1,000

Source: research results based on the criteria of the Master Plan for Sustainable Rural Tourism in Serbia (2011) and empirical experience.

Figure 1. Map of Zlatibor and Zlatar



Note: The map was done for the purpose of this work and its author is Jovanović, R.

Alternatives analyzed in this paper are the following: A1 – villages on Zlatar Mountain and A2 – villages on Zlatibor Mountain. Zlatibor as the geographical term implies a rolling-hills plateau in South-Western Serbia, between the rivers Sušica, Uvac, Tara and Murtenica. The following villages are situated in this area: Negbina, Sjeništa, Bela Reka, Ljubiš, Gostilje, Dobroselica, Sirogojno, Rožanstvo, Semegnjevo, Tripkova, Šljivovica, Mačkat. Some of tourist motives in these settlements are: Stopića cave, the Crni Rzav river and its tributaries, waterfall in Gostilje where there is the birthplace of Dimitrije Tucović, a prominent hero of the labor movement, a wooden church in Dobroselica, the Museum of folk architecture in Sirogojno, a village that is known for its traditional handicrafts. Zlatar is a mountain in the South-Western Serbia, situated between the rivers Uvac and Lim. A special form of relief is the cave system of Ušac with its curiously unique properties. Tourist motives in this area are the following lakes: Zlatarsko, Radoinjsko and Sjeničko (Štetić, 2007).

Tourist offer of the region includes: the Uvac Special Nature Reserve with griffon vulture habitats, ethno village Štitkovo, eco-ethno village Vraneša, wooden churches in Kućani

and Radijevići and Dubnica monastery. The project Improvement of Organic Agricultural Production in Mountainous Regions of Serbia, which is funded through the competitive grant scheme (CGS) as a part of the STAR project of the Ministry of Agriculture, Forestry and Water Management includes a manifestation called the Field Days and Organic Production of Buckwheat and Grain organized on Zlatar mountain by the Faculty of Agriculture, University of Belgrade. Also, villages on this mountain organize Zlatar Cheese Festival and Country Olympics (www.zlatar.org.rs/seoski.htm). In a Zlatibor village Tripkova an art colony and an art workshop for making glass as well as international seminars on Serbian folklore are organized in summer, while Pršutijada (festival of smoked ham) is organized in Mačkat and in Sirogojno there are art, music, and literary gatherings, exhibitions, lectures and summer schools (www.zlatibor.org.rs/k/rural tourism).

Factors determined by the methodology of the World Tourism Organization that are applied in the Master Plan for Sustainable Rural Tourism in Serbia (2011) are the following: natural, human and capital factors, while attractors are: natural (activities based on natural tourist motives), cultural (lifestyle, events, cultural tourism motives) and attractors in the form of centers of activity (shopping, festivals).

Table 4. Comparison of alternatives (destinations) in relation to K1 criterion – factors and attractors

	A1	**A2**
A1	1,00000	0,33333
A2	3,00000	1,00000
∑	4,00000	1,33333

Source: research results based on information from the websites of local tourism organizations – www.zlatibor.org.rs/k/seoski-turizam, www.zlatar.org.rs/seoski.htm

Villages on Zlatar and Zlatibor mountains are developing destinations. A developing rural tourist destination usually involves few developed attractors, poorly developed allied and support industries, many factors with the potential for development and the need for relatively large investments in order to convert factors into attractors. A developed rural tourism destination usually consists of a lot of developed attractors, developed allied and support industries, several factors that need to be developed and relatively little need for investment so that factors can be converted into attractors.

Table 5. Comparison of alternatives in relation to K2 criterion – seasonality

	A1	**A2**
A1	1,00000	0,25000
A2	4,00000	1,00000
∑	5,00000	1,25000

Source: research results based on the field observations.

Seasonality depends on the proximity of the centers of mountain tourism on Zlatar and Zlatibor mountains. Seasonality is less evident on Zlatibor mountain, where there are both summer and winter seasons, while Zlatar Mountain has a more active winter season,

but when rural tourism is concerned the summer season dominates.

Table 6. Comparison of alternatives in relation to K3 criterion – accessibility and infrastructure

	A1	A2
A1	1,00000	0,20000
A2	5,00000	1,00000
∑	6,00000	1,20000

Source: research results based on the statistical yearbook Municipalities and Regions in the Republic of Serbia, 2013.

Road infrastructure in Serbia is not in the best condition, although it occupies an important place in the development of rural tourism (Vujović et al., 2012). Accessibility and infrastructure, perceived in terms of access and movement possibilities in a particular area, have been analyzed using the statistical data on the length of roads in Nova Varoš and Čajetina municipalities. The total length of roads in Nova Varoš (543.6 km) and Čajetina (534 km) is approximate, but there is a difference in the length of municipal roads with modern roadways, with Čajetina showing advantage (275 km of municipal roads with modern roadways) compared to Nova Varoš (107 km of municipal roads with modern roadways). A considerable length of municipal roads in Nova Varoš does not have an asphalt surface (334 km), which shows that transportation infrastructure is at a low level (Municipalities and Regions in the Republic of Serbia, 2013).

Table 7. Comparison of alternatives in relation to K4 criterion – proximity of the marketplace

	A1	A2
A1	1,00000	0,33333
A2	3,00000	1,00000
∑	4,00000	1,33333

Source: research results based on the field observations.

The position of Zlatibor villages in relation to the emitting centers of tourism is more favorable than the position of villages on Zlatar. As the distance between Zlatar and Zlatibor is not far, it is the experience or judgment that slightly favors the villages on Zlatibor taking into consideration those settlements through which major roads pass show advantage.

Table 8. Comparison of alternatives in relation to K5 criterion – unemployment

	A1	A2
A1	1,00000	5,00000
A2	0,20000	1,00000
∑	1,20000	6,00000

Source: research results based on the statistical yearbook Municipalities and Regions in the Republic of Serbia, 2013.

In Serbia, during the transition period a large number of workers became redundant in privatized firms and those that were liquidated, and the economic crisis influenced further the (un)employment opportunities of the rural population in non-agricultural activities and in the cities. Households in rural areas have started using the available natural, residential, and agricultural resources in order to perform diversification of activities and engage in rural tourism as an additional activity (Ševarlić, Petrović, 2011).

Unemployment data are recorded at the municipal level in the publication Municipalities and Regions in the Republic of Serbia and are not comparable with the international methodology. Therefore, the comparison of alternatives with respect to unemployment as a criterion is generalized and includes the municipalities of Nova Varoš and Čajetina, where the analyzed villages are situated. Statistical data show that the percentage of the unemployed in total active population in Nova Varoš is 30.6%, whereas in the municipality of Čajetina it is 13.5% (Municipalities and Regions in the Republic of Serbia, 2013). Taking into account the fact that a high rate of unemployment should be given priority in the development of rural tourism, this priority has been given to villages on Zlatar Mountain.

Table 9. Comparison of alternatives in relation to K6 criterion – accommodation facilities

	A1	A2
A1	1,00000	0,33333
A2	3,00000	1,00000
∑	4,00000	1,33333

Source: research results based on information from the websites of local tourism organizations – www.zlatibor.org.rs/k/seoski-turizam, www.zlatar.org.rs/seoski.htm

Accommodation facilities are compared on the basis of local tourism organization data. About 390 beds have been recorded in Zlatibor village, and in the villages on Zlatar Mountain about 350. Taking into account the categorization of accommodation, not just the number, villages on Zlatibor show advantage. In rural areas, housing can be analyzed in the context of the type, location (position and accessibility), quality of services and activities offered to guests by hosts (Albaladejo Pina, Delfa Diaz, 2005). If it is taken into consideration that the forms of rural tourism by length of stay are divided to the excursion and residence stay (Todorović, Štetić, 2009), it can be concluded that in the villages of Zlatar and Zlatibor excursion tourism is dominant. Natural and anthropogenic tourist motives of villages are additions to tourism offer in the mountain resorts of Zlatar and Zlatibor.

Table 10. Comparison of alternatives in relation to K7 criterion – experience in rural tourism

	A1	A2
A1	1,00000	0,33333
A2	3,00000	1,00000
∑	4,00000	1,33333

Source: research results, field observations.

Although mountain tourism on Zlatibor has a long tradition, rural tourism on this mountain has not developed simultaneously with this dominant form of tourism. Rural tourism on Zlatar Mountain has been developing in recent years, since the accommodation facilities of mountain tourism have been restructured and privatized.

Values in rows A1 and A2 have been calculated on the basis on the values in Tables 4 to 10. When it comes to the K1 criterion, having compared A1 and A2, values have been summarized in each column. Each number in the table has been divided by the sum value in that column. The values of the rows have been summed up and the median value has been determined for each row ($\Sigma = W / 2$) in relation to the K1 criterion. Values of the alternatives have been obtained in the same way when other criteria are considered.

Table 11. Overview of the values of criteria and alternatives in relation to the given criterion

	K1	K2	K3	K4	K5	K6	K7
	0,35040	0,03180	0,23747	0,04616	0,10556	0,15897	0,06965
A1	0,25000	0,20000	0,16667	0,25000	0,83333	0,25000	0,25000
A2	0,75000	0,80000	0,83333	0,75000	0,16667	0,75000	0,75000

Source: research results calculated on the basis of the results in the previous tables.

The value of a criterion function for the given criterion is multiplied by the weight of the criterion: A1=A1*K1+ A1*K2+ A1*K3+ A1*K4+ A1*K5+ A1*K6 + A1*K7

Calculation for A2 is performed in the same way. Thus, the final ranking of alternatives A1 – 0.2902, A2 – 0.7098 is obtained. By analyzing alternatives in relation to criteria, it can be concluded that priority is given to villages on Zlatibor, but also that they demonstrate certain weak dominance. The only criterion in which the priority is given to villages on Zlatar is the unemployment because in this area it is higher than in Zlatibor villages.

From the perspective of rural tourism, attention should be paid to the support of public institutions engaged in the establishment of private enterprises, small family businesses in order to empower rural areas economically and promote tourism related activities (Fleischer, Felsenstein, 2000), paying special emphasis on the sustainability of rural tourism (Sanagustin Fons et al., 2011).

Natural characteristics of a rural area are not a sufficient condition so that it may become a tourist destination. It is therefore necessary to develop receptive and communication capacities and provides high quality of additional tourist spending offers. The competitiveness of rural tourism destinations will depend on these elements and their development. This is the imperative for tourism development today that many rural areas that tend to be involved in tourism do not possess (Vuković et al., 2010). The same can be concluded when it comes to villages on Zlatar and Zlatibor Mountains.

Development of rural tourism should take advantage of the challenges of agriculture that are reflected in the exchange of goods in the sectors of tourism and agriculture (food and beverages), intangible impact on rural tourism (preserved natural environment),

employment opportunities and improvement of cultural tourism of a local community (Milenković, Utvić, 2013).

Insufficient development of villages and agriculture slows down the overall development, which should condition a more complex model of development policy towards the countryside and rural society. In this context a multidisciplinary-based model of integral rural tourism development could be applied. Investment in these areas is crucial to their attractiveness, encouragement of sustainable growth and employment (Štetić et al., 2012). Integrated rural tourism provides greater likelihood of coordination and consistent institutional policy for rural and regional development while simultaneously encouraging partnerships between local stakeholders, ones that can provide broader development benefits arising from mergers and synergies (Štetić et al., 2012*).

Conclusion

In the future development of tourism in rural settlements on Zlatibor and Zlatar activities should be directed towards greater utilization of accommodation facilities, improvement of infrastructure, promotion and propaganda, education of the local population on the provision of tourism services, and financial stimulation. By connecting clusters in tourism with clusters in agriculture, a tourism complementary field, beneficial effects could be achieved in rural settlements on Zlatibor and Zlatar. Cooperation of agricultural producers is evident in villages on these mountains when animal breeding on Zlatibor and production of buckwheat on Zlatar is concerned.

Losing position in relation to competition is manifested as one of the risks in rural tourism industry. Villages on Zlatibor and Zlatar mountains, although similar in certain characteristics, should present at the tourism marketplace the attributes that make them different from the others, while acknowledging and accepting the vision of rural tourism importance, and appreciating the good practice.

References

1. Albaladejo Pina, I., Diaz Delfa, M. (2005): *Rural tourism demand by type of accommodation,* Tourism Management, Vol. 26, no. 6, pp. 951–959, Elsevier (printed in Great Britain), available at: www.sciencedirect.com/science/article/ pii/S0261517704001384
2. Fleischer, A., Felsenstein, D. (2000): *Suport for rural tourism. Does it Make a Difference?,* Annals of Tourism Research, Vol. 27, No. 4, pp. 1007–1024, Elsevier (printed in Great Britain), available at: www.researchgate.net/profile/Daniel_Felsenstein/publication/223510803_Support_for_rural_tourism_Does_it_make_a_difference/fileort/9c96052124b3d449b7.pdf
3. *Master plan održivog ruralnog turizma Srbije*, UN (Svetska turistička organizacija), Srbija, 2011, available at: www.futurehospitalityleaders.files.wordpress.com/2012/11/master-plan-odrzivog-razvoja-ruralnog-turizma-u-srbiji.pdf
4. Milenković, S., Utvić, S. (2013): *The challenges of rural areas in Serbia promising tourist activities,* Economics of Agriculture, Vol. 60, No. 1, pp. 65–76, IAE, Belgrade.

5. Republički zavod za statistiku (2013): *Opštine i regioni u Republici Srbiji 2013. Stanovništvo prema ekonomskoj aktivnosti, Dužina puteva,* Beograd, Srbija, available at: www.pod2.stat.gov.rs/Objavljene Publikacije/Ops/OPS2013.pdf
6. Saaty, T. L. (1990): *How to make a decision: The Analytic Hierarchy Process,* European Journal of Operational Research, Vol. 48, no. 1, pp. 9–26, Elsevier (North Holland), available at: www.ac.els-cdn.com/037722179090057I/1-s2.0-037722179090057I-main.pdf?_tid=8f43f0ac-ff96-11e3-b60a-00000aab0f6b&acdnat=1404050966_61aed2844855472e6a06b4968b813a17
7. Sanagustin Fons, V., Mosene Fierro, J., Gomez y Patino, M. (2011): *Rural tourism: A sustainable alternative,* Applied Energy, Vol. 88, pp. 551–557, Elsevier (printed in Great Britain), available at: www.arquivo.rosana.unesp.br/docentes/patriciaramiro/LEAR/Turismo%20rural%20uma%20alternativa%20sustentável.pdf
8. Ševarlić, M., Petrović, Z. (2011): *Razvoj seoskog turizma u opštini Gornji Milanovac – ugledni primer za sela Srbije,* Ekonomika poljoprivrede, Vol. 58, No. 3, pp. 457–473, IAE, Belgrade.
9. Štetić, S. (2007): *Turistička geografija Srbije*, Izdavač Autor, Beograd, Srbija.
10. Štetić, S., Pavlović, S., Stanić, S. (2012): *Integrisani ruralni razvoj turizma − studije slučaja zapadna Irska i Avinjon i Istočna Srbija,* Hotellink, časopis za teoriju i praksu hotelijerstva, Vol. 13, br. 19–20, pp. 56–65, Visoka hotelijersta škola, Beograd, Srbija.
11. Štetić S., Pavlović S., Stanić S. (2012*): *Integrisani ruralni turizam kao mogućnost razvoja sela,* Zbornik radova sa konferencije – Prvi stručni skup o ruralnom turizmu i održivom razvoju, Kragujevac, Srbija, pp. 142–149.
12. Štetić, S., Šimičević, D., Čurčić, N. (2013): *Specifični oblici turizma*, Izdavač Autor, Beograd, Srbija.
13. Todorović, M., Štetić, S. (2009): *Ruralni turizam*, Univerzitet u Beogradu – Geografski fakultet, Beograd, Srbija.
14. Turistička organizacija Zlatibor (2014): *Informacije o seoskom turizmu na Zlatiboru*, available at: www.zlatibor.org.rs/k/seoski-turizam
15. Turističko-sportski centar Zlatar (2014): *Informacije o seoskom turizmu*, dostupno na: www.zlatar.org.rs/seoski.htm
16. Vujović, S., Cvijanović, D., Štetić, S. (2012): *Destinacijski koncept razvoja turizma,* Institut za ekonomiku poljoprivrede, Beograd, Srbija.
17. Vuković, P., Arsić, S., Cvijanović, D. (2010): *Konkurentnost ruralnih turističkih destinacija,* Ekonomika poljoprivrede, Vol. 57, No. 1, pp. 47–60, IEP, Beograd.

KONKURENTNOST TURISTIČKIH DESTINACIJA U KLASTERU RURALNOG TURIZMA ZLATAR, ZLATIBOR

Sanja Pavlović[3], Gordana Čavlin[4]

Rezime

U savremenom razvoju turizma klasterska analiza dobija sve veći značaj. Uglavnom se radi o prostorima koji imaju slične turističke vrednosti. U ovom radu je prikazana konkurentnost turističkih destinacija u klasteru ruralnog turizma Zlatar, Zlatibor, definisanom Master planom održivog razvoja ruralnog turizma u Srbiji. AHP metodom (analitički hijerarhijski proces) najpre su upoređeni kriterijumi u parovima, a zatim i alternative (seoska naselja Zlatara i Zlatibora). Sedam kriterijuma korišćenih u ovom radu su: faktori i atraktori, pristupačnost i infrastruktura, smeštajni kapaciteti, nezaposlenost, iskustvo u ruralnom turizmu, blizina tržišta, sezonska uslovljenost. AHP metodom su utvrđene relacije između uticajnih faktora i određena dominantnost jednog faktora u odnosu na drugi. Konstatovana je relativno slaba dominantnost seoskih naselja Zlatibora, po svim kriterijumima, osim kada je u pitanju nezaposlenost, gde dominiraju seoska naselja na Zlataru.

***Ključne reči**: ruralni turizam, konkurentnost, klaster, Zlatar, Zlatibor.*

3 Sanja Pavlović, Ph.D., docent, Univerzitet u Beogradu, Geografski fakultet, Studentski trg 3/III, 11000 Beograd, Srbija, Telefon: +381 64 258 84 68, E-mail: spavlovic20@gmail.com

4 Gordana Čavlin, mr. sci. oecc., Pokrajinski sekretarijat za zdravstvo i socijalna pitanja - Novi Sad, Odeljenje Subotica, Telefon: + 381 62 884 87 36, E-mail: goca.cavlin@gmail.com

Original scientific paper
Economics of Agriculture 3/2014
UDC: 339.13:631(478)

MOLDOVAN AGRI-FOOD SECTOR DILEMMA: EAST OR WEST?

Alexandru Stratan[1]

Summary

During the period 2010-2013, Republic of Moldova launched a number of initiatives to develop the trade policy in order to ensure a more facilitating legal framework for the implementation of economic and trade relations with the key external partners. An agreement on the creation of a free trade area in the CIS was signed in this period. Similarly, Republic of Moldova started negotiating the Association Agreement with the European Union, which was signed in June this year and is part of the Deep and Comprehensive Free Trade Agreement (DCFTA).

This article aims to assess the main effects of signing the Association Agreement for the Moldovan agricultural sector, while examining its reaction, if Moldova would have opted for integration within the Customs Union - Russian Federation, Belarus, and Kazakhstan.

Key words: *free trade agreement, export, import, agri-food trade, customs union.*

JEL: *F13, F15, Q17*

Introduction

In the recent years the agricultural sector in the Republic of Moldova has become a real concern for the public authorities responsible for policy development and this sector monitoring as well as for the entrepreneurs and population engaged in this sector. The negotiation, initialling and finally signing the Association Agreement has increased the concerns for this sector, particularly the way in which it will meet the challenges of symmetric liberalization of foreign trade with European Union countries and Turkey.

The significance of these measures is more important than trade relations facilitation, which aim at speeding up the structural reforms and overcoming the transition stage of the national economy. At the same time, the Association Agreement is as important for the national economy, as much responsibility is required on behalf of the national authorities and the entire civil society for its proper implementation. Along with the intensification of the liberalization process, many sectors of the economy will face a number of challenges to increase the competitiveness and ensure resistance to foreign competition.

1 Alexandru Stratan, Ph.D., Director, National Institute for Economic Research, Ion Creanga Street no. 45, 2064 Chisinau, Republic of Moldova, Phone: +373 691 05 921, E-mail: alex_stratan@yahoo.com

One of the most threatened sectors, which was granted special importance in the negotiations is agriculture, which continues to play an important role in the national economy.

Problem awareness stage

Agricultural market distortions remain a major focus of contention in world trade negotiations. Estimates of the effects of liberalising current agricultural trade restrictions indicate an approximately $385 billion increase in global welfare, with the disproportionate share of the benefit being enjoyed by developing countries (Lambert, McKoy, 2009).

Agricultural protection continues to be the most contentious issue in global trade negotiations (Aksoy, Beghin, 2005). The proliferation of regional trade agreements in recent years has intensified the debate on the desirability of these agreements in themselves and their coexistence with multilateral free trade under the WTO (Sarker, Jayasinghe, 2007). World Trade Organization as a multilateral institution has delivered significant positive effects on members' agricultural trade despite its sensitive nature and the reluctance of members to undertake serious reform (Grant, Boys, 2012).

Given the subject of analysis of this study, it is important to understand the distinction between a Free Trade Agreement (FTA) and Customs Union (CU).

The Free Trade Agreement is a preferential trade agreement representing one of the early forms of economic integration. It may involve two or more partners who are committed to eliminate tariff and mostly, those non-tariff barriers in the mutual trade, whilst retaining its autonomy in the development of the customs tariff in the relations with third countries/ non-members (WTO Glossary), as well as promoting other trade policy issues, including participation in other formations of integration.

The Customs Union implies a higher level of integration compared to FTA. Besides the maximal elimination of tariff and non-tariff barriers to trade, the participants to the agreement that usually are geographically adjacent countries, shall adopt a common customs tariff, reaching a consensus on the degree of protection of all sectors. Therefore, the negotiation and implementation of a CU involves increased efforts in terms of time, financial resources and political concessions. By adhering to CU, a state loses a large part of its autonomy to develop its trade policy (Chauffour, Maur, 2011).

Since the very beginning of the integration, agriculture in the European Union has been one of the most important sectors (Antevski et al., 2012).

The Republic of Moldova was included in the EU list of countries benefiting from preferences since the mid-90s, and since 2008, it benefits from autonomous trade preferences. However, the opportunities offered by this system are not fully exploited to the existing potential and the rates offered for a large part of agri-food products remain unrealized, except for some tariff headings, such as: corn, wheat, barley, wines. Moreover, some products such as those of animal origin cannot be exported to this market (Chistruga et al., 2010).

Data sources and methodology

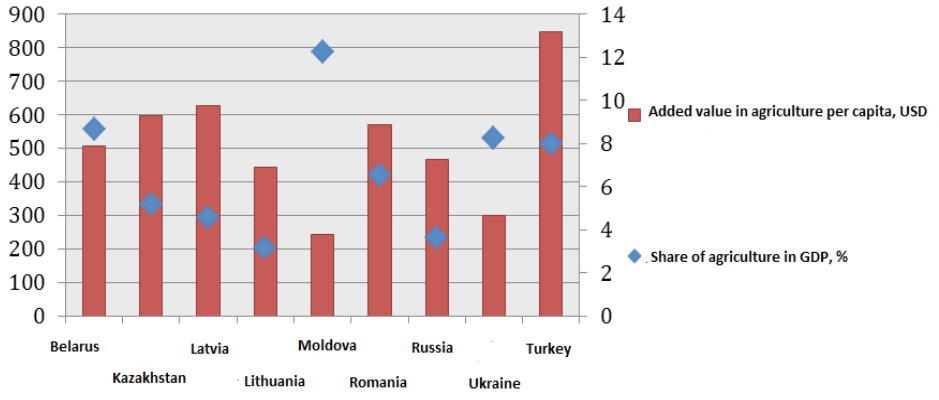
The objective of this study is to assess the main effects of signing the Association Agreement over the Moldovan agricultural sector, while examining its reaction, if the Republic of Moldova would have opted for integration into the Customs Union (Russian Federation, Belarus and Kazakhstan). During the investigations, the following study methods were used: statistical method, which involved researching a larger number of observations, analysis of growth rates of the economic indicators; theoretical synthesis, formulation of judgments. The information was gathered from sources of the World Bank, World Trade Organization UNCTAD, WITS and National Bureau of Statistics of the Republic of Moldova.

Results with Discussion

The agri-food sector traditionally plays an important role in negotiating the preferential trade agreements. This can be explained by the food security concerns of the public authorities of the country, welfare of the rural population, and in particular, in developed countries, the impact of imports of certain agri-food products could have on consumer safety. Moldovan agricultural production and export are specialized mostly in raw material and semi processed agri-food products (Stratan et al., 2012).

In the Republic of Moldova, the situation is quite challenging. Compared to other countries in the region, the contribution of agricultural sector to GDP growth is significant. According to the National Bureau of Statistics, in 2011[2], the share of agricultural sector (added value) in GDP exceeded the level of 12% of GDP, and food and beverages industry - constituted about 4.5 % of GDP and more than a quarter of the added value created by the industry. The value added in industry was lower than in the agricultural sector, about 11.4% of GDP.

Graph 1. Share of agriculture in GDP and added value created in the sector per capita (in 2011)



Source: According to UNCTAD data, 2012.

2 The last year for which annual data regarding GDP resources is available and the agricultural sector was not affected by natural disasters was taken into account.

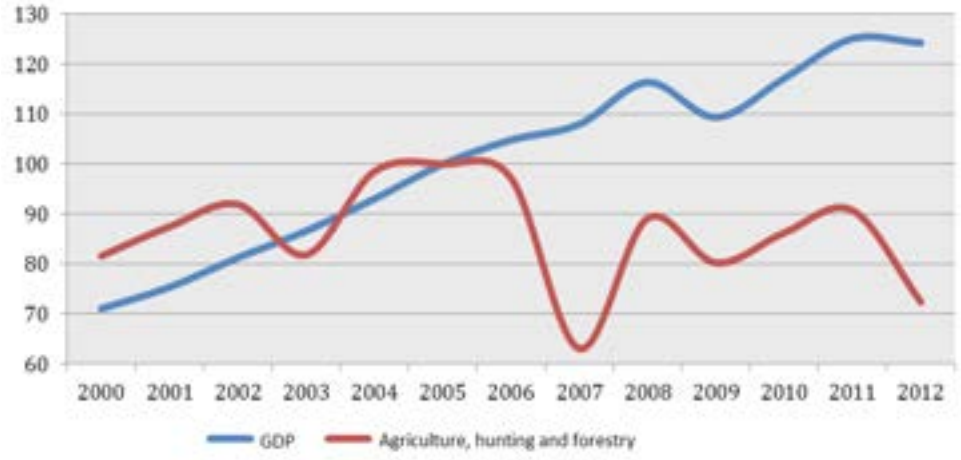
The contribution of agriculture to GDP growth in the Republic of Moldova is significant, although decreasing in recent years. Similarly, as indicated also by the data in Graph 1, despite the high share in GDP, compared to the Central and Eastern Europe countries, the added value created in the sector reported per capita in the Republic of Moldova is much lower.

Given the still high share of agriculture in GDP, in the Republic of Moldova a moderate correlation, positive correlation between the growth of added value in agriculture and GDP growth is observed (Graph 2). The correlation coefficient between these two variables was 0.57 in 2007-2012.

Similarly, agriculture represents an important source of livelihood of the rural population. According to 2012 data, about 18.8% of revenue comes from self-employment, 20.8% from remittances, 22.5% - social benefits (pensions, child benefits, compensation and social aid) and about 28.6 % from employment. In this context, it should be noted that agriculture employs 48 % of the active population in rural areas, or more than a quarter of the working population at the national level (26.4%).

At the same time, the agricultural sector in the Republic of Moldova faces a number of constraints. In recent years, it has experienced a noticeable degradation and its structural weaknesses make it extremely vulnerable to sudden changes in natural conditions and the weather, which have become quite common in this period.

Graph 2. Evolution of added value in agriculture sector (2005 = 100%)



Source: According to the National Bureau of Statistics of the Republic of Moldova.

According to the World Bank data, in regional aspect, the Republic of Moldova is among the countries with the lowest level of labour productivity (Table 1). Quantified as the ratio of value added per worker, expressed in USD in 2005 prices, the labour productivity in the sector amounted to USD 1,884.3, much smaller than in the countries from the region, let alone the European average.

Table 1. Labour Productivity in Agriculture

Indicator	EU	Romania	Turkey	Republic of Moldova	Russian Federation	Kazakhstan	Belarus
Labour Productivity, USD (2005=100%)	18,380.4	8,067.8	6,597.8	1,884.3	5,968.6	3,532.5	7,845.5

Source: according to World Bank data, 2012.

Low productivity can be explained by several reasons:

- farm structure, concentrated mainly in small households. According to 2012 data, about 50.8% of agricultural production was obtained in population households;
- weak farm endowment with technical equipment, the agricultural machinery owned by farmers being most often morally and physically obsolete;
- low level of education of the population employed in the sector, which adversely affects the structural transformation process and technological progress;
- poorly diversified structure of the sown areas, etc.

Competitiveness of Moldovan foreign trade with agri-food products on the European Union market and the Customs Union market - Russian Federation, Kazakhstan and Belarus

The agricultural sector is a separate branch in many economies, including those developed; some of the reasoning for this hypothesis has been mentioned above. In particular, in case of the latter, although agriculture is not necessarily the main branch ensuring economic growth, these countries are important players in the international market of agri-food products.

And the risk is much higher in countries, where the sector has a determinant role in its production and exports structure. Or in this case, the competitiveness of the sector, which indicator is both the internal and external performance represented a key factor in reducing its volatility to various changes in the market or natural conditions and the stability of the entire economy accordingly.

Here we can talk about the Republic of Moldova, a small country, with a high degree of openness, but characterized by a high level of dependence on imports. The sources ensuring the national income growth are less diversified and unsustainable over time.

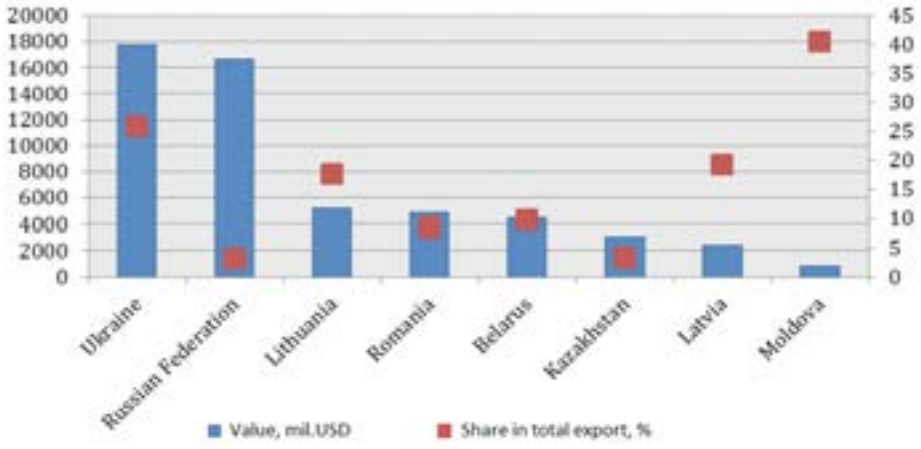
The Republic of Moldova suffers from a chronic deficit of the current account. The small geographic area and the lack of special natural resources inevitably ensure a high dependence of the economy on imports, but for many years, along with the facilitation of foreign trade operations, the mass import of those products that the country would be able to produce with its own forces. At the same time, on the revenue side - revenues generated from exports are volatile revealing the specifics of the local production sector,

where the agriculture and food industry have a relatively high share; the high share of re-exports, geographical concentration on high risk markets etc. The influx of foreign investment is very small. Foreign investments even if these imply also the increased level of indebtedness from the outside, are slow to come. Remittances which are an important source of household income are not sustainable over time and experience has shown that the correlation between them and the performance of the production sector in the country is very fragile.

In this context, since the Republic of Moldova is prepared to form a deep and comprehensive free trade area with the EU countries, the external competitiveness of the Moldovan agri-food sector was analysed with a view to assessing the potential impact of trade liberalization over this. Additionally, a comparative analysis with the countries of the Customs Union - Russian Federation, Belarus, and Kazakhstan was included in order to obtain a vision of the effects that could generate an alternative decision on joining this structure.

According to 2012 data, although it is not the most relevant indicator, given the high fluctuation of agricultural production due to drought in the respective year, the agri-food production valued about USD 875.3 million; representing 40% of total exports (Graph 3.). The size of the share is impressive compared to other countries in the region, which may serve, including as an indicator of the country's international specialization in this sector.

Graph 3. Foreign trade with agri-food products in territorial profile



Source: According to the data of the National Bureau of Statistics of the Republic of Moldova.

The calculations made indicate a moderate level of concentration per product groups in this sector in the Republic of Moldova, Herfindahl Hirschman Index (HHI), calculated based on export data presented according to the Harmonized System Classifier (HS) disaggregated at 4-digit level, getting the value of 0.19 in 2012. The index calculated at a more disaggregated level indicates lower values, but which also fall within the limits of some moderate concentration indexes (Table 2).

Table 2. Degree of export concentration by product category

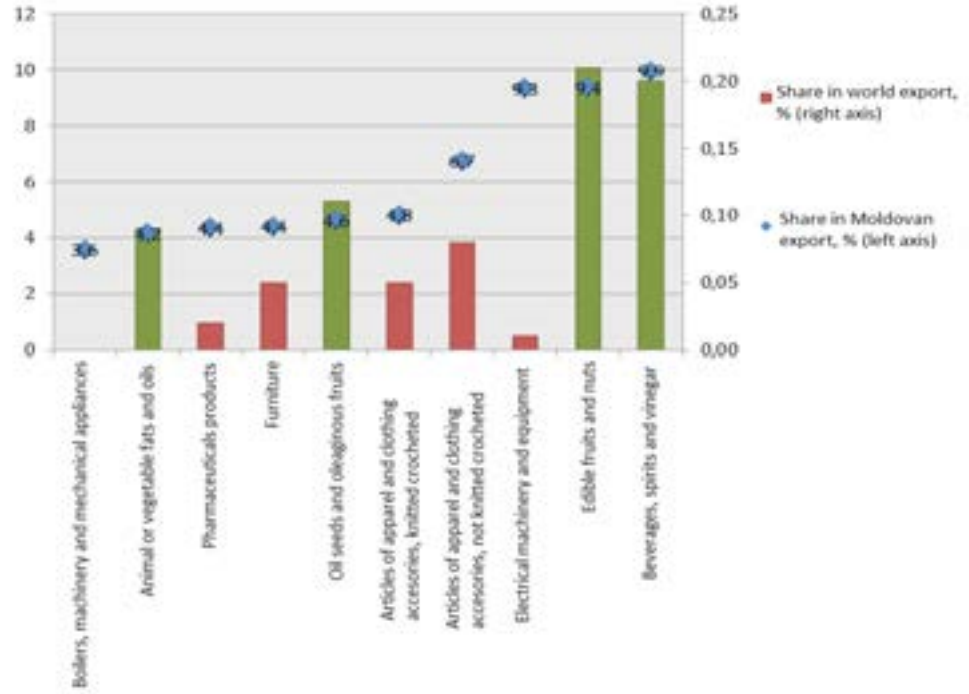
Indicator	2009	2010	2011	2012
HHI (SA dez. 4)	0,214	0,189	0,183	0,191
HHI (SA dez. 6)	0,178	0,162	0,171	0,167

Source: Author's calculations according to WITS data.

The main commodities contributing to increased exports of agri-food products are wine and grape must, wine distillate, shelled walnuts, sunflower seeds and sunflower oil, apples and apple juice, sugar, etc.

In fact, these goods are found mostly among the 10 main products exported by the Republic of Moldova for which also the world market share, though small, is higher compared to other products exported (Graph 4). In 2012, despite a reduction in agricultural production by 22.3% compared with 2011, Moldovan exports of agricultural products accounted for about 0.07% of world exports to this market. Meanwhile fruits have gained a market share of 0.21%, alcohol beverages 0.2%. It should be noted, however, that with the exception of wine, their production does not allow for the creation of a major added value or the agri-food sector is overall an area that has low capacity to increase the added value compared to other sectors.

Graph 4. Top 10 products in the Moldovan exports (in 2012)



Source: According to the National Bureau of Statistics of the Republic of Moldova.

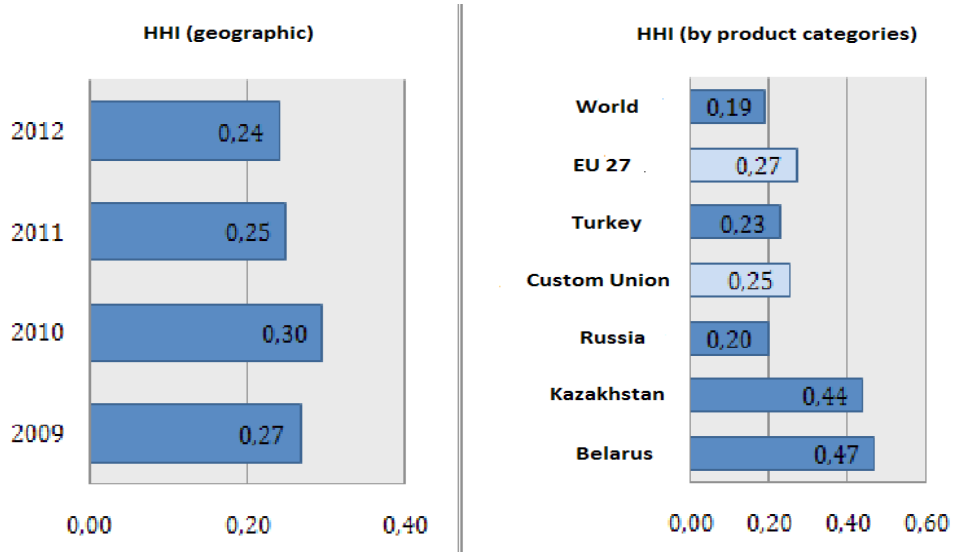
The relatively high geographic concentration of agri-food products is a major constraint for the sector, which produced critical repercussions on this and its wine industry, in particular in 2006. In 2012, the geographic HHI was at the lower limit of transition from high to moderate concentration (Graph 5).

About 27% of exports of these categories of products are oriented towards Russian Federation. At the same time, the following nine main markets where three-quarters of Moldovan agri-food products are concentrated are as follows: Russian Federation, Romania, Belarus, Ukraine, Italy, Poland, Kazakhstan, France, USA and New Zealand.

In order to assess the competitiveness of agri-food exports to Western market and Customs Union trading partners in the Eastern area, the index on concentration and diversity of products exported from the point of view of the number of product categories exported in a disaggregated way at the level of 4 digits as per HS on both markets, including Turkey (Table 3) was calculated.

In 2012, 78.4% of total exports of agri-food products, which corresponds to USD 688.9 million were exported to the Customs Union, European Union and Turkey. Separately, 37.9% of exports of this product category were delivered to the Customs Union market, 38.6% to the EU and 1.8% to Turkey.

Graph 5. Geographical concentration of exports of agri-food products



Source: Author's calculations according to WITS data.

First of all, it should be mentioned that the value of exports is distributed more or less equally between East and West. At the same time, in the Customs Union with three member countries, approximately 71% of the agri-food products are going to the Russian Federation, in the European Union, in 2012, half of the exports were delivered to the three main markets - Romania, Italy and Poland.

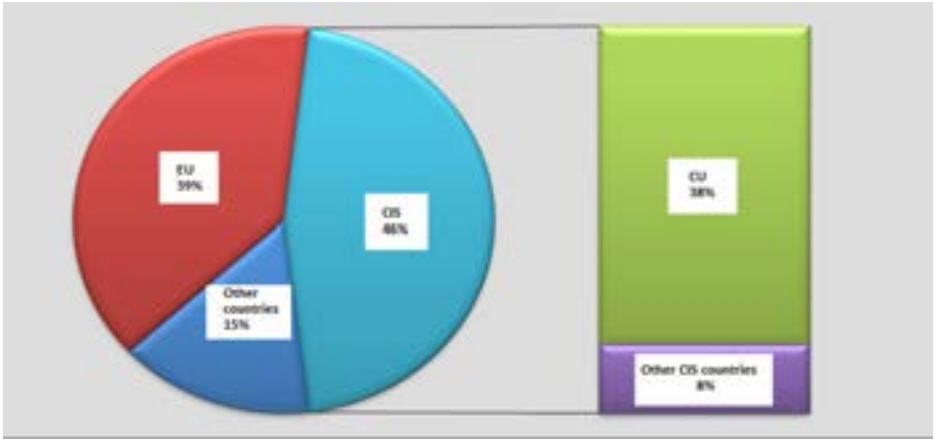
Table 3. Number of products exported according to HS disaggregated at 4 digit level (in 2012)

Indicator	Customs Union	Belarus	Kazakhstan	Russia	Turkey	EU 27	World
Total number of products exported	121	121	121	121	121	121	121
Number of positions to the respective destination	71	37	36	62	15	76	121

Source: Author's calculations according to WITS data.

Similarly, these markets, overall, show a high concentration by product groups. The Customs Union HHI in 2012 constituted 0.25, mainly due to the high concentration of exports to Belarus and Kazakhstan. In addition to this, the range of goods exported to these markets is very limited. According to HS disaggregated at 4 digit level, out of 121 categories registering exports in 2012, only about 30-31% of these were covered in Belarus and Kazakhstan.

Graph 6. Geographical distribution of exports of agri-food products (in 2012)



Source: Author's calculations according to WITS data.

Among the main categories of products exported to the Customs Union market are the following: grapes wine, apples, wine distillates, apricots, cherries and peaches, grapes, tomatoes, fresh or refrigerated beef, some of these being exported in the amount of 90% or even 100% to that destination (Clipa, 2013). Around 66% and accordingly, 61% of exports to Belarus and Kazakhstan was represented by wines and wine distillates.

The concentration degree of products exported to the European Union, indicate relatively higher values compared to the situation registered in the Customs Union. In 2012, about 43.5% of agri-food products exported to this market consisted of supplies of oil from sunflower seeds and nuts. At the same time, overall, the range of products exported to this destination is a bit more diversified compared to that directed towards the Eastern markets. Other products shipped to the European market in larger quantities are sunflower seeds, fruit juice, sugar made of cane or sugar beet and chemically pure sucrose in solid form, wine, soybeans and soybean oils, bakery, confectionery and biscuits even with cocoa, corn, etc.

As for Turkey, while in 2013, it entered the top five major markets, the export of agri-food products indicates a degree of concentration that is placed between moderate and high, and their range was very narrow - 15 titles from HS classifier disaggregated at 4 digit level, represented, in fact, by the products exported in raw form. Among the top five exported agri-food products represented about 84.1 % of the total were nuts, sunflower seeds, barley, rapeseed, wheat and meslin.

Based on those mentioned above, we can see that the top products exported to the CU and the EU, differ with some exceptions. With the exception of wine, which is among the top 10 main products exported both eastwards and westwards to the Customs Union predominantly agricultural products in fresh form are delivered: various fruits and vegetables, and meat, which is exported in very small quantities, or which import is even restricted in the European Union. On the other hand, both technical and cereal crops in a processed or raw form as well as other products of the food industry are exported to the EU. At the same time, it should be noted that the number of product categories for which the Republic of Moldova has a revealed comparative advantage (RCA) to export across the European Union and Turkey, 58 and 62 tariff categories is significantly lower than Customs Union - 86 tariff categories.

Table 4 shows the results of calculating the trade specialization index performed based on HS classifier disaggregated at 4 digit level using Bella Balassa's formula. The index is calculated by dividing a country's sectors share to total trade, on the one hand and the share of world exports in the corresponding sectors in the worldwide total exports, on the other hand (International Trade Centre).

This indicator is to be interpreted with caution, since it does not exclude the effect of various non-tariff barriers that could contribute to the creation of a comparative advantage in certain sectors, in this context, the most relevant example being the subsidies granted by various countries for this purpose. At the same time, it allows creating an overview of the industries where some countries have potential to compete on the international market.

According to the RCA index, the number of tariff headings for which the country has a revealed comparative advantage in worldwide trade is very limited - 17 out of 121 categories exported by the Republic of Moldova and 196 by the countries worldwide in 2012. At the same time, it is about those products for which the Moldovan exporters have a comparative advantage over all partners analysed.

Summarizing the main performance of agri-food products exports to these three destinations, several general trends could be outlined.

The Customs Union is the traditional market, enabling selling more than a third of Moldovan exports of agri-food products and the reduced imports from these destination permit to maintain a positive balance of trade, which value exceeded USD 200 million in 2010-2012. However, the bilateral trade with these countries has experienced a noticeable slowdown in recent years, the average annual growth in the period 2006-2012 placing it well below the overall average. Similarly, the high geographic concentration determines a high degree of volatility of exports to the Customs Union.

Table 4. Products, in the trade of which the Republic of Moldova has a revealed positive comparative advantage worldwide and in relation to the partners from the Customs Union, European Union and Turkey (in 2012)

***	Worldwide	Customs Union	Belarus	Kazakhstan	Russian Federation	EU 27	Turkey
1206	13,0	165,8	1747,0	212,9	148,2	82,7	50,7
2307	5,6	+	+	+	+	45,3	201,1
0802	5,2	1180,4	2197,6	1130,3	1142,9	129,0	5,7
1512	4,6	14,5	385,7	85,8	11,8	68,9	13,6
0809	3,6	2094,6	147,7	39983,2	215273,2	28,9	8,4
2204	2,7	10101,5	1826,8	145838,1	13185,6	15,8	1081,6
0808	2,7	291,2	20,8	23170,4	9602,9	24,8	60,0
0205	1,7	766,9	+	+	606,9	14,1	+
2001	1,7	78,2	7,2	1817,6	253,4	16,6	1,6
2208	1,4	75,7	37,5	1834,5	70,2	8,4	161,5
2009	1,4	210,5	222,1	1219,1	183,0	12,6	11,3
2206	1,3	435,2	55,2	+	762,1	9,4	814,1
2306	1,3	7,5	22,7	11,7	6,6	16,1	214,3
1703	1,1	7,7	10,6	18,9	6,8	20,0	2818,2
0806	1,1	1020,5	135,5	496,6	4232,9	16,6	1,5
2105	1,0	30,1	9,9	582,9	30,5	5,4	9,4
2005	1,0	71,2	30,4	1074,9	68,1	7,4	5,5

Source: Author's calculations according to WITS data.

Note: Those positions for which the comparative advantage of the Republic of Moldova compared to the partners referred stems, mainly from the lack of exports of these countries as per these tariff headings were marked with "+".

Exports of agri-food products registered a relatively high dynamic during this period (Table 5). It is relevant that the Republic of Moldova exports to the Western countries also products with higher added value. At the same time, the exports remain highly concentrated; some products being even restricted on this market because of the failure of the domestic producers to comply with the European quality requirements. A pressure from imports that were also growing is felt; at the same time, the degree of coverage of imports by exports, being superior to the 100 % level.

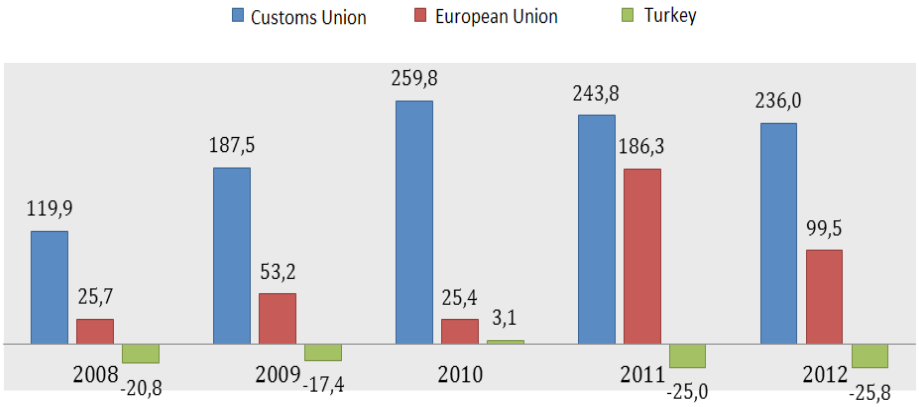
Table 5. Growth rate of the foreign trade of the Republic of Moldova, (annual average, 2006-2012), (in %)

Direction of trade flows	Export	Import
MD total	7,1	17,0
MD - UE	18,8	15,6
MD - Turkey	100,1	28,1
MD - UV	2,7	11,7

Source: Author's calculations according to WITS data.

As for Turkey, the Republic of Moldova seems to be disadvantaged on the agri-food products market in the competition with this partner, attesting a negative trade deficit in the bilateral trade. The exports are relatively small, moderate concentration, but poorly diversified, consisting mostly of unprocessed agricultural products (Graph 7).

Graph 7. Evolution of trade balance deficit with agricultural products of the Republic of Moldova (in 2012)



Source: Author's calculations according to WITS data.

Key indicators of development of the sector as a whole, indicates the existence of a set of main constraints over substantive limited domestic supply of agri-food products, along with other factors that reduce the competitive ability of local farmers. Here, the following could be mentioned: the underdeveloped quality infrastructure, underdeveloped agricultural infrastructure, excessive fragmentation of agricultural land, reduced business culture and lack of cooperation between producers and others.

Balance of the risks and integration options opportunities of the Republic of Moldova for the agricultural sector

In November last year, the Republic of Moldova initialled and then signed in June current year the Association Agreement with the European Union, which directly provides for the creation of a Deep and Comprehensive Free Trade Area (DCFTA) between the parties, and will try to continue the assessment of the main risks and opportunities for the local agri-food sector. Also in this context, the potential effects shall be appreciated that may bring a deeper economic integration in the CIS - joining the Customs Union - Russia, Belarus and Kazakhstan.

Impact of the DCFTA with the European Union

Currently, the foreign trade between the Republic of Moldova and the European Union takes place within the asymmetric preferential trade regime, meaning "0" tariff for agri-food products exported to these destination, with some exceptions:

- products of animal origin, cereals, white sugar and grape wine that are allowed to be exported within the established tariff quotas;
- fruits and vegetables exempted of VAT payment at import. At the same time, many of these products are subject to a minimum price of entry at import (Council Regulation, 2008).

Several previous studies indicate that even in these conditions, the local exporters cannot fully benefit from the existing preferential regime. The biggest constraint in this regard is their low capacity to adjust to the European quality standards. Although for many years, the Republic of Moldova has started upgrading the quality infrastructure; this process is costly and time consuming.

Including due to this reason, the agri-food industry has been given a special role in negotiating the agreement, both regarding the import in the Republic of Moldova and in the EU. Thus, according to the Association Agreement, Title V - dedicated to the trade and trade-related areas and annexes aimed at this title, by signing this Agreement, the parties will grant each other free market access for products originating in the Republic of Moldova and the EU, with some exceptions.

The European Union will maintain certain tariff and non-tariff barriers for certain products:

- tariff rates - tomatoes, garlic, grapes, apples, plums, grape juice;
- customs duty without VAT - artichokes, cucumbers, zucchini, oranges, clementine, mandarins, pears, apricots, cherries, nectarines, peaches, grape, etc.

The Republic of Moldova will reserve the right to gradually liberalize the import of products according to some predefined schemes, in different terms, depending on the sensitivity of the sector. In this way, some instruments can be distinguished in this respect:

Reducing tariffs in three annual steps, starting from 1 January of the year following the entry into force of the Agreement – melted cheeses, other than grated or powdered like;

Reducing tariffs in 5 annual steps, starting from 1 January of the year following immediately after the entry into force of the Agreement - fresh cheese (including whey cheese) unfermented and curd, tomatoes, onions, zucchini, carrots, cucumbers, sweet peppers, nectarines, strawberries, effervescent wine and grape must, etc.;

Reduction of tariffs in 10 annual steps, starting from 1 January of the year following the entry into force of the Agreement - milk and milk cream, concentrated or with added sugar or other sweetening matter, cherries, canning and meat products, offal of turkeys, uncooked beef and others;

Reducing tariffs, starting from 1st January of the fifth year after the entry into force of the Agreement – fresh, refrigerated or frozen eatable pork offal, grapes, apples, peaches, plums (Association Agreement between the European Union and the European Atomic Energy Community and their Member States, of the one part, and the Republic of Moldova, of the other part).

In addition to these particular issues, based on this Agreement, "Parties shall commit themselves to enhance the cooperation and good neighbourly relations, including cooperation in the development of projects of mutual interest, in particular those aimed at preventing and combating corruption and criminal activities. These commitments are a key factor in the development of relations and cooperation between the Parties and contribute to the regional stability and peace.

In fact, this agreement represents a complex reform agenda for the Republic of Moldova in key areas to ensure the functioning of the economy according to the principles of market economy. The document will compel the local authorities to promote the necessary reforms in several areas: justice, public administration, competition, consumer protection, statistics, public finance management, industrial policy, corporate governance, energy infrastructure, transportation, quality, social policy, etc.

If these reforms are not be promoted by the public authorities, business environment and society as a whole, the agreement could have a profound negative impact on the agri-food sector, which will produce chain effects on other areas - employment, standards of living of the population, public finance, etc.

Liberalization of imports of agri-food products in the European Union and Turkey would mean the elimination of import customs tariffs, which would correspond to a reduction in the price of imported goods by about 10 % within maximum 10 years. According to the WTO data, in 2012, the simple average of MFN tariff in the Republic of Moldova for this product category was of 10.5%. Based on separate categories, the simple average tariff was of: 14.7% for animal products, 12.8 % - fruits and vegetables, 10.2 % - cereals and cereal products, 13 % - beverages and tobacco. In particular for wines, for one litter of imported wine, a duty of 0.5 euro is levied etc.

Although competitive pressure will bring benefits to the local consumers, this might also influence their income levels, given the high level of employment of the population in agriculture. Removal of any protection tools for this sector without increasing its immunity could cause higher unemployment and relatively low qualifications and reduced training of the workers could create problems in their reorientation towards other sectors.

At the same time, the correct and responsible promotion of the reform program could generate multiple opportunities for the sector:

- creating an equitable business environment and a functioning market with fair competition rules;
- increased foreign investment in the sector and its modernization;
- reducing the technical barriers and diversification of the range of products exported to this market;
- increasing export activity of the local entrepreneurs, enhanced by a regulatory framework of the long-term predictable trade relations;

- development of the entrepreneurial culture following the intensification of trade relations with economic partners at a more advanced stage of development.

Impact of a potential membership in the Customs Union

As an alternative to creating a DCFTA with the European Union, we considered appropriate the assessment of the effects that could be generated by the accession of the Republic of Moldova to the Customs Union - Russia, Kazakhstan, and Belarus. Or even now, this issue is one that causes many discussions.

The trade regime with the current members of the Customs Union enjoyed a preferential treatment within the CIS, even since the country's independence. Since 2013, the trade relations with these countries are conducted within the multilateral agreement on the creation of a Free Trade Zone in the CIS, which was signed in 2011.

This agreement replaced the multitude of bilateral free trade agreements between the countries, establishing a single regulatory trade framework for all Member States. This ensures, to a great extent, the elimination of any kind of mutual trade barriers, although even within this, some tariff barriers have been preserved, the most relevant in this respect being the export customs duties.

Unlike the commercial relations with the Western partners, the preferential trade regime with the member countries of the Customs Union is symmetrical, which implies free access to mutual markets.

In this context, according to the existing empirical evidence, it is unlikely that the adherence of the Republic of Moldova to this structure could create new trade flows in the mutual trade - a term defined in the literature as trade creation effect.

Indeed, the Republic of Moldova has a relatively higher specialization in the agricultural sector compared to the Eastern partners than the Western partners, but those advantages that could be provided by a preferential trade regime for enhancing the bilateral trade flows most likely have been used by now.

Table 6. Comparative aspects on MFN tariff rate in the regional profile (in %)

Country	All products	Agri-industrial products	Industrial, non-agricultural products
Republic of Moldova	4,6%	10,5%	3,7%
Belarus	9,7%	13,4%	9,1%
Kazakhstan	9,5%	13,4%	8,8%
Russian Federation	10,0%	13,3%	9,4%
European Union	5,5%	13,2%	4,2%

Source: According to World Trade Organization data.

About 38 % of agri-food products traded outside the Republic of Moldova is exported to the Customs Union market. This is an exclusive market for the sale of some plant and meat products. And joining the Customs Union involving immediate abolition of controls at the internal borders, could contribute to the facilitation of trade in these product categories.

Similarly, elimination of export duties of the member countries for various fuels, especially for the Russian natural gas, could reduce the costs for farmers.

However, if the Republic of Moldova accedes to the Customs Union, certain costs that would result from this process should be taken into account.

First of all, considering that joining the Customs Union would mean a common customs tariff and trade regime, the CU membership is incompatible with DCFTA, which the Republic of Moldova intends to sign with the European Union. Similarly, it could most likely have the effect of non-renewal of autonomous trade preferences granted by this, which would significantly affect exports of agricultural products on the western market. In this way, if currently, with certain exceptions, within the autonomous trade preferences, the exports of agri-food products enjoy free access to the EU market, then the cancelation of the trade preferences would mean imposing on Moldovan products entering the EU market an average tariff of about 13.2 % (Table 6).

Exports of agri-food products in UV reflect a high degree of geographical concentration, this increasing the volatility of exports, and sector activity to various external shocks. And as shown by the experience of 2006, such shocks can sometimes have fatal consequences on some sub-sectors of agriculture and food industry.

The reduction of productivity in the sector, as a result of the increase in customs tariffs for industrial products, including capital imported from the third countries, so necessary for the technical endowment of the branch. It's about weak entrepreneurial culture and production organization as well as technical endowment of agricultural enterprises and farms that are reflected in the low productivity obtained.

Risk of delaying the promotion of some reforms necessary for the business development in general.

Conclusions

The dilemma between East and West for the Republic of Moldova is a topic that has seen many debates in recent years. Currently, the Republic of Moldova is on the eve of signing a Deep and Comprehensive Free Trade Agreement with the European Union that will put on an equal footing two important economic partners, being able to exploit the opportunities offered by the preferential trade arrangements and close cooperation with both.

At the same time, we have addressed this issue in the context of agri-food sector development prospects, considering it as still being an important one, or neglecting it could have adverse effects on the branch if the potential risks are not acknowledged.

Agriculture is one of the sectors that still provide a major contribution to ensuring the growth of the national economy. At the same time, in recent years, its evolution indicates a relatively high volatility, which also causes large oscillations in economic growth rates.

For this reason, but also due to the importance of this sector to ensure development of rural areas and the country's food security, the agricultural development must have a special place in the economic policy of the state.

Regeneration of the sector and increase in its competitiveness abroad requires some radical measures that would produce changes in its structure. The signing of the Association Agreement with the EU could serve as instrument to stimulate this process, but the DCFTA establishment will present some challenges for the sector, which are to be properly addressed, for this not to turn into risks.

Literature

1. Aksoy, M.A., Beghin, J.C. (2005) *Global agricultural trade and developing countries*, The International Bank for Reconstruction and Development / The World Bank, 327 p.
2. Antevski, M., Petrović, P., Vesić, D. (2012) *Development perspectives in agriculture and rural areas in Serbia in the EU integration process,* Economics of agriculture, Belgrade, Vol. LIX, Nr.2 (177-356), pp. 243-250.
3. Association Agreement between the European Union and the European Atomic Energy Community and their Member States, of the one part, and the Republic of Moldova, of the other part, available at: http://eeas.europa.eu/moldova/assoagreement/assoagreement-2013_en.htm
4. Chauffour, J. P., Maur, J. C. (2011): *Preferential Trade Agreement Policies for Development*, Washington: 2011, p. 111-112.
5. Chistruga, M., Clipa, V., Fala, A. (2010): *Analiza performantelor exporturilor Republicii Moldova prin prisma regimurilor preferentiale de comert,* Chisinau: Institutul de Economie Finante si Statistica (Analysis of the Republic of Moldova's export performance from the perspective of trade preferential regimes).
6. Clipa, V. (2013): *Republic of Moldova: challenges and prospects on the accession to the Customs Union: Russia – Kazakhstan - Belarus vs. concluding the Deep and Comprehensive Free Trade Agreement with the European Union*. INCE, 2013, available at: http://iefs.md/ro/activitatea-ince/publicacii/356-republic-of-moldova-challenges-and-prospects-on-the-accession-to-the-customs-union-russia-kazakhstan-belarus-vs-concluding-the-deep-and-comprehensive-free-trade-agreement-with-the-european-union.html
7. Council Regulation (EC) No. 55/2008 of 21st January 2008 introducing autonomous trade preferences for the Republic of Moldova and amending Regulation (EC) No. 980/2005 and Commission Decision 2005/924/EC.
8. Grant, J.H., Boys, K.A. (2012) *Agricultural Trade and the GATT/WTO: Does Membership Make a Difference?,* American J. of Agricultural Economics, Vol. 94, Issue 1, pp. 1-24.
9. International Trade Centre, *Trade competitiveness map* available at: *http://legacy.intracen.org/appli1/TradeCom/Documents/TradeCompMap-Trade%20PerformanceHS-*

UserGuide-EN.pdf

10. Lambert, D., McKoy, S. (2009) *Trade Creation and Diversion Effects of Preferential Trade Associations on Agricultural and Food Trade*, Journal of Agricultural Economics, Vol. 60, Issue 1, pp.17–39.
11. Sarker, R., Jayasinghe, S. (2007) *Regional trade agreements and trade in agri-food products: evidence for the European Union from gravity modeling using disaggregated data,* Agricultural Economics, Vol. 37, Issue 1, pp. 93–104.
12. Stratan, A., Moroz, V., Lucasenco, E. (2012): *Diagnosis of the agri-food value chains in the Republic of Moldova*. Proceedings, International Symposium on Agrarian Economy, p. 302.

Websites:

13. World Bank, available at: http://wits.worldbank.org/CountryProfile/Country/MDA/Year/2012/Summary http://wits.worldbank.org/CountryProfile/Country/MDA/Year/2012/TradeFlow/Export/ http://wits.worldbank.org/CountryProfile/Country/MDA/Year/2012/TradeFlow/Export/show/Exports%20Share%20%28%60%29;Trade%20Value%20%28US$%20Thousand%29;Nbr%20Of%20Traded%20HS6%20digit%20Products/Sort/Trade%20Value%20%28US$%20Thousand%29 http://wits.worldbank.org/CountryProfile/Country/MDA/StartYear/2008/EndYear/2012/TradeFlow/Export/Indicator/Trade%20Value%20%28US$%20Thousand%29/Partner/All/Product/WTO-SoP1# http://wits.worldbank.org/CountryProfile/Country/MDA/Year/2012/TradeFlow/Import/Partner/WLD/Product/All%20Groups http://wits.worldbank.org/CountryProfile/Country/MDA/Year/2012/show/Development%20Indiator%20-%20GDP,%20GNI%20and%20Others

    http://data.worldbank.org/indicator/EA.PRD.AGRI.KD
14. UNCTADstat, available at: http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx
15. National Bureau of Statistics of the Republic of Moldova, available at: www.statistica.md/pageview.php?l=ro&idc=315&id=2278

    www.statistica.md/category.php?l=ro&idc=336&
16. World Trade Organization, available at: www.wto.org/english/res_e/reser_e/tariff_profiles_e.htm

Original scientific paper

Economics of Agriculture 3/2014
UDC: 636.5:330.143

ECONOMIC ISSUES OF BROILER PRODUCTION LENGTH

László Szőllősi[1], István Szűcs[2], András Nábrádi[3]

Summary

The length of broiler production cycle is also an important factor when profitability is measured. This paper is to determine the effects of different market ages and down-time period, overall broiler production cycle length on performance and economic parameters based on Hungarian production and financial circumstances. A deterministic model was constructed to manage the function-like correlations of age-related daily weight gain, daily feed intake and daily mortality data. The results show that broiler production cycle length has a significant effect on production and economic performance. Cycle length is determined by the length of down-time and grow-out periods. If down-time period is reduced by one day, an average net income of EUR 0.55 per m² is realizable. However, the production period is not directly proportional either with emerging costs or obtainable revenues. Profit maximization is attainable if the production period is 41-42 days.

Key words: *annual broiler cycles, slaughter age, down-time period, profit maximization, simulation model.*

JEL: *Q12*

Introduction

Poultry are kept in most areas of the world and provide an acceptable form of animal protein to most people throughout the world. Intensively kept broiler is seen as a way of rapidly increasing animal protein supplies for rapidly increasing urban populations. Broilers are relatively low priced, reproduce rapidly, and have a high rate of productivity (FAO, 1999). Broiler production is characterized by its high economic return due to its short production cycle, where the production cycle of broiler takes 6-7 weeks meanwhile the production cycle of bovine takes from 3 to 12 months. Therefore the capital cycle is very rapid in

1 László Szőllősi, Ph.D., Assistant Professor, University of Debrecen, Faculty of Economics and Business, Böszörményi Street 138, H-4032 Debrecen, Hungary, Phone: +36 52 526 917, E-mail: szollosi@agr.unideb.hu

2 István Szűcs, Ph.D., Associate professor, University of Debrecen, Faculty of Economics and Business, Böszörményi Street 138, H-4032 Debrecen, Hungary, Phone: +36 52 526 912, E-mail: szucsi@agr.unideb.hu

3 András Nábrádi, Ph.D., Professor, University of Debrecen, Faculty of Economics and Business, Böszörményi Street 138, H-4032 Debrecen, Hungary, Phone: +36 52 526 911, E-mail: nabradi@agr.unideb.hu

the case of broiler production as compared with the capital cycle in other types of animal production. In the case of broiler production the capital cycle can be repeated 6-7 times a year (Grepay, 2009).

The sales price of broiler products and the price of feed, determining the major cost item (Horne, 2013), the costs of feed changed unfavourably during the previous period. It is necessary to emphasize the significant volatility of the price of feed materials (Rezitis, Stavropoulos, 2009), which is a major uncertainty factor for the poultry sector. Today competitive broiler production cannot be conceived without the thorough knowledge of the affecting determinant factors and their effective applications (Zoltán, 2010). Besides the improvement of production parameters, the efficient exploitation of available resources, e.g. useful floor areas are of key significance.

Genetic improvement, in addition to maximizing live performance in poultry production, has allowed a reduction of age to market. Every year the marketing age of broilers decreases by an average of 0.75 days for the same performance (Gunasekar, 2006). According to Ziggers (2013), in 2020 the Ross 308 broiler will grow to 2.3 kg in 34 days with a feed conversion ratio (FCR) of 1.37. Currently in New Zealand male broilers already reach 2 kg bodyweight in 28-30 days with an FCR of 1.4.

Zoltán (2010) underlines that market demands and economic potentials do not determine merely the volume of activities and their cost-benefit relations, but also the used type and body weight along with market age, the method of processing, product types and packaging. During the last decades, eating habits have globally changed, with a strong preference for meat cuts and processed meat, and consequently the market of chicken cuts has exceeded the whole-bird market (Schmidt, 2008). Popp (2014) claims that in the coming ten years chicken meat will remain the most favourite and cheapest meat, satisfying consumer demands in the form of chicken cuts. This has led to later-finishing birds for the production of commercial cuts because larger birds present higher yield and higher added value (Schmidt, 2008).

An aspect of measuring profitability that is often forgotten is that of time, but time also has an effect on the biological efficiency of the bird (Kleyn, 2002). Thus in addition to several other factors, the profitability of broiler production is also affected by the number of annual cycles as well. Cycle length is also an important factor when the annual return from the broiler business is considered. Extending cycle length will increase the return per bird, whereas, shortening the grow-out time will increase the number of harvests per year (Samarakoon, Samarasinghe, 2012). The number of annual cycles is influenced, on one hand by the length of the down-time period (the period when the floor area is empty) between rotations; on the other hand, the length of the production period of one turn (Aliczki, Bárány, 2013). The former is the period spent on leaning, disinfection and resting while the latter is the function of desired body weight and daily weight gain. Kleyn (2002) pointed out that a 38-day grow-out with an 11-day down-time would lead to an extra harvest per year compared to the traditional practice of 42-day cycles with 14-day intervals. The yearly number of broiler production cycles can be calculated by the following equation:

$$Yearly\ number\ of\ production\ cycles = (365\ days)/(Production\ cycle\ length\ (days))$$

where,

$$Production\ cycle\ length\ (days) = grow\ out\ time\ (days) + down\ time\ (days)$$

Broilers should be sold at an optimal weight. More profit can be achieved if broilers can be sold at an optimal market weight and meet consumer preferences and market needs (Wang et al., 2012). Increasing the slaughter age is advantageous for processors because it provides highly meaty animals. However, the effects on profit, meat product quality, the environment, and animal welfare have been little investigated (Baéza et al., 2011).

Goliomytis et al. (2003) made a study to investigate the growth pattern of chickens beyond the common slaughter age of 42 days to maturity. Schmidt (2008) carried out a study in an integrated company to evaluate live and economic performance of broilers as a function of market age. Baéza et al. (2011) made a study to evaluate the effects of increasing slaughter age on technical and economic factors, including production efficiency and environmental costs, bird welfare, and breast meat quality in a modern heavy broiler line. Samarakoon, Samarasinghe (2012) made a survey to determine the most profitable grow-out period for broilers using different cost related performance indices. Wang et al. (2012) developed a computer simulation model to evaluate the optimal market age of broilers.

Bodyweight at slaughter increased progressively with age. Net gain, which takes into account both the feed and rearing costs, reached a maximum between 42 and 49 days of age, and then decreased (Baéza et al., 2011). The results of Goliomytis et al. (2003) showed that live bodyweight was rapidly increasing until 44 days of age only, at which maximal growth rate was attained. Beyond this age, growth rate declined and approached zero at maturity.

Feed consumption increased until 84 days of age. The cumulative feed conversion grew at a decreasing rate, but continuously with increasing age (Goliomytis et al. 2003; Wang et al., 2012). Schmidt (2008) determined a 2.1% increase in FCR per day of market age increase.

Goliomytis et al. (2003) mentioned increased age-related mortality and identified its cause in the incidence of leg weakness due to higher body weight. According to results of Baéza et al. (2011), mortality increased from 42 days of age, reaching 5- to 7-fold greater values for broilers reared until 63 days than for broilers reared until 35 or 42 days. Results by Schmidt (2008) highlighted approximately 1% point of increase in mortality between 43 and 46 days of age.

Baéza et al. (2011) pointed out the meat yield increased regularly with age at slaughter. However, estimation of the net gain based on the amount of chickens produced in relation to feed and other production costs was optimal at 42 days of age. According to Schmidt (2008), the net gain reached a maximum between 42 and 49 days of age, and then decreased. It highlights the limitations of increasing broiler age beyond 49 days, mainly because of increased mortality and decreased feed efficiency which both affected the economic efficiency of broiler meat production.

Schmidt (2008) summarized the findings and claimed that increasing market age significantly affects production efficiency, which may result in higher production costs. Taking into account the main aspects of sustainability (economic and environmental), Baéza et al. (2011) recommended slaughtering chickens at 42 days of age.

The time-related development of indices does not reveal linear correlations between day of life and efficiency. Daily weight gain grows at a decreasing rate as a function of time, reaches its maximum value between 35-42 days of life and then starts to decrease. Simultaneously, specific feed utilization grows proportionately with the growing age of chickens. At the beginning of the production period, a significant amount of energy is used for growing but later most of it is used for subsistence. Although feed intake for chickens increases as time passes and their body weight gets higher, less and less feed intake energy is needed for weight gain (Zoltán, 2010). These correlations are worth considering especially chickens are to be marketed with higher body weight. On one hand, possible failures during the production period emerge more markedly if body weight is higher; on the other hand, the appropriate utilization of capacities and the number of cycles are also key economic issues.

Therefore, this study aimed at determining the effects of different market ages and different down-time period, overall broiler production cycle length on performance and economic parameters based on Hungarian production and financial circumstances.

Materials and methods

A deterministic simulation model was established for the examination of the cost and income situation of broiler production. Different technological and economic input parameters were used for the model (Table 1). Technological parameters included the technical efficiency indicators of production in which the base values were calculated from farm-level data. The economic parameters contained the Hungarian input and output prices of production as well as its unit cost items relating to the year of 2012.

The simulation model shows the function-like relations expressing the development of age-related daily bodyweight gain, daily feed intake and daily mortality. To determine the parameters of the function we have built on the performance (Aviagen, 2012) identified by ROSS 308 hybrid producers. The standard in Ross 308 broiler as-hatched performance is the achievement of 2.77 kg live weight with an FCR of 1.72 at 42 days of age in recent times (Aviagen, 2012). Average farm level data in our study failed to reach this value; daily weight gain is about 7% and daily feed intake is 3% lower: 2.59 kg live weight with an FCR of 1.88 at 42 days of age. Performance data broken down into days of life, published by Aviagen (2012), (daily weight gain, daily feed intake) were corrected according to these differences and a trend function was fitted to the data. Accordingly, the following correlations were used for modelling:

$$DBWG = 0.0000321 \times A\text{^}4 - 0.003982 \times A\text{^}3 + 0.1112815 \times A\text{^}2 + 1.8067024 \times A + 10.1266395 \quad (R\text{^}2 = 0{,}99)$$

Where, DBWG: Daily Bodyweight Gain (g/bird/day), A: age in days.

$$DFI = -0.00187 \times A\text{^}3 + 0.12342 \times A\text{^}2 + 3.23988 \times A + 8.3914 \quad (R\text{^}2 = 0{,}99)$$

Where, DFI: Daily Feed Intake (g/bird/day), A: age in days.

Table 1. Basic technological and economic data of models

Items	Unit	Value
Useful floor area	m^2	10,000
Stocking density	chicks/m^2	18.50
Thinning time	days	36
Number of removed broiler (thinning)	bird/m^2	3.00
Natural gas utilization	m^3/m^2/cycle	3.20
Electricity utilization	kWh/m^2/cycle	3.70
Number of farm employees	person	8
Broiler price	EUR cent/kg	92.95
Chick price	EUR cent/chick	28.68
Feed prices		
Starter	EUR cent/kg	34.83
Grower		33.12
Finisher I.		32.14
Finisher II.		32.14
Natural gas price	EUR cent/m^3	51.49
Electricity price	EUR cent/kWh	9.68
Average wage (worker)	EUR/hour	2.76
Average wage (farm manager)		4.49
Animal health	EUR cent/chick	4.84
Depreciation	EUR/m^2/year	8.15
Catching (manual)	EUR cent/kg	0.93
Litter clean out and deliver	EUR cent/m^2/cycle	6.91
Cleanout, disinfection		19.70
Other costs[1]		73.10
Overheads	EUR/m^2/year	4.49

Source: Research Institute of Agricultural Economics (2013) and farm-level data (2013)[4].

Note: [1]It includes the costs of repairs and maintenance, litter, carriage and disposal of carrion, as well as the costs of farm administration; Average exchange rates of 2012: 289.4 HUF/EUR

4 Data provided by a significant Hungarian integration. Data collection is not representative.

Daily mortality was determined on the basis of the mean value of farm level data by function fitting which can be divided into 3 phases:

$$[DM]\_(1-7d) = -0.0009 \times A\text{^}4 + 0.02535 \times A\text{^}3 - 0.23077 \times A\text{^}2 + 0.74509 \times A - 0.38681 \quad (R\text{^}2 = 0{,}97)$$

Where, $DM_{1\text{-}7d}$: Daily Mortality between 1-7 day of age (%), A: age in days.

$$[DM]\_(8-41d) = 0.00071 \times (A-7) + 0.07323 \quad (R\text{^}2 = 0{,}23)$$

Where, $DM_{8\text{-}41d}$: Daily Mortality between 8-41 day of age (%), A: age in days.

$$[DM]\_(42-49d) = 0.0826 \times e\text{^}(0.2284 \times (A-41)) \quad (R\text{^}2 = 0{,}99)$$

Where, $DM_{42\text{-}49d}$: Daily Mortality above 42 day of age (%), A: age in days.

According to Esmail (2013), there are many factors (flock size, stocking rate, temperature, lighting, feed and water factors, etc.) which affect feed intake, bodyweight gain and mortality of chickens and hence determine the efficiency of broiler production. This study is beyond the scope of evaluating these factors' effects, so the before mentioned function-like relations are regarded as constants.

The output parameters of the model include production efficiency indicators, economic indicators per production and capacity units which were determined for a cycle and for one year as well.

According to Wang et al. (2012) the highest EPEF value gives the optimum return, and the best slaughtering age is the day where the highest EPEF as well as the lowest FCR is achieved. However, our objective in broiler production is to measure profit per production unit, in this case per m^2 of house space per unit time (Kleyn, 2002; Samarakoon, Samarasinghe, 2012). So, yearly net income per m^2 was used to measure economic performance as a function of broiler production cycle length.

Results and discussion

In Hungary, the production period is usually 42-44 days. The length of the production period and final bodyweight is responsive to market demands. With 42-day production and 14-day downtime periods the annual rotation is 6.5. If this period is shorter, space utilization, specific feed utilization and the volume of produced meat/m^2 are more favourable and similarly, the fixed costs per one kg of production decrease. When rotation is planned, the period of time required by stock changes (cleaning, floor area preparation) is to be taken into consideration, because it remains constant irrespective of the length of the production period. The floor area should be prepared for the next livestock as fast as possible. However, this process has got its biological limitations.

It should be emphasized that poultry industry and market features, due especially to the lower volume of slaughter during the Christmas and New Year periods are difficult to

calculate precisely. The number determined by theoretical calculations could be merely workable if the activities of chick transporting and slaughtering-processing plants could be precisely coordinated with chick placement and slaughter periods. However, such "fine tuning" fails to work in practice, even in integration. At the same time, participation in integration can provide better potentials for programming and planning.

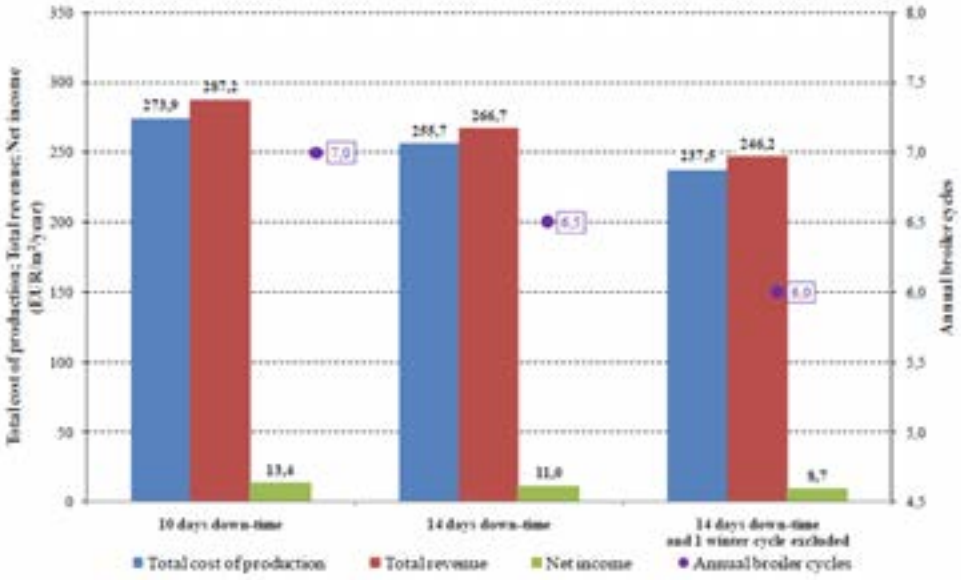
Economic effects of down-time period length

Under Hungarian climatic conditions, with our available technical background and management potentials, broiler producers have 10-14 day long down-time periods. Due to the volatility of programming day-old chick and slaughter chicken transport 7 cycles rarely take place annually. Most frequently, more than 50% of broiler producers rear 6.2-6.4 rotations annually. 6.5-6.8 turns are realizable for 20-25% of producers, the rest of them raises less than 6 cycles and exclude one-two winter cycles.

The following part of our paper strives to demonstrate the effects of down-time period on the development of economic markers. On one hand, down-time period is measured by the length of the down-time period, on the other hand by the excluded winter cycle. We have prepared three model calculations for the investigation. In the first one we used a shorter, 10-day long down-time period. In the second one a 14-day long period was supposed. In the third one we calculated with a 14-day long period and 1 excluded winter cycle. On average, supposing a production period of 42 days and a down-time period of 14 days, annually 6.5 cycles can be completed. Given a shorter, 10-day long period with constant production period, the number of annual cycles can be increased to 7. With a down-time period of 14 days and 1 excluded winter turn the number of realizable rotations is 6. As for cash-flow, revenue and expenditure in rotations do not emerge on a pro-rata basis; however, incurred costs and realizable income can be managed on a pro-rata basis from the viewpoint of evaluating the distribution of income and expenditure. We considered this economic principle in the assessment of the economic results of cycles without whole numbers.

Figure 1 summarizes production costs, revenues and incomes that can be calculated with various down-time periods on an annual basis. Fixed costs (wages, social contribution, amortization and general costs) do not change in correlation with down-time and thus with the number of cycles annually. However, variable costs and revenues show changes. Given a shorter down-time period, production costs increase by 7.1% (18.17 EUR/m^2/year). If, however down-time is longer, production cost falls by 7.1%. In addition to costs, the length of down-time periods also affects the amount of revenue. If the down-time period is shorter, revenue increases by 7.7%, if it is longer, revenues decrease by 7.7%. The variability of costs and revenues also changes linearly with the volume of attainable income. If the down-time period is decreased by four days, the attainable net income will increase by 21.3% (2.35 EUR/m^2/year). Otherwise, with a 14 day down-time period and one excluded winter cycle the realizable net income will decrease by 21.1% on one m^2 of floor area annually.

Figure 1. Comparison of the division of annual costs and incomes with different down-time periods



Source: own calculation.

Differences of length in the down-time period of floor areas per 100 kg live weight can also be observed if annual data are considered. Table 2 summarizes specific economic figures. Variable costs show no specific changes in relation to the length of the down-time period. Such kind of variable costs are chick, animal health and energy costs. By contrast, the development of fixed costs per a unit of live weight is affected by the live weight produced on an annual basis and produced live weight is influenced the number of cycles. Accordingly, with a shorter down-time period specific production costs decrease by 0.55% (0.51 EUR/100 kg). Due to this, the net income per a unit of product increases by 12.7%. Given a longer down-time period, costs specifically increase by 0.64% (0.57 EUR/100 kg), which can reduce the net income of 100 live weight by 14.8%.

Table 2. Comparison of the division of specific costs and incomes with different down-time periods

Specification	**Value** *(EUR/100 kg live weight)*		
	10 day down-time period (7 cycle/year)	**14 day down-time period (6.5 cycle/ year)**	**14 day down-time period and 1 winter cycle excluded (6 cycle/year)**
1. Chick cost	12.02	12.02	12.02
2. Feed cost	60.52	60.52	60.52
a) animal health	*2.03*	*2.03*	*2.03*
b) energy	*4.54*	*4.54*	*4.54*
c) labour	*2.23*	*2.40*	*2.60*

Specification	Value *(EUR/100 kg live weight)*		
	10 day down-time period (7 cycle/year)	**14 day down-time period (6.5 cycle/ year)**	**14 day down-time period and 1 winter cycle excluded (6 cycle/year)**
d) depreciation	*2.64*	*2.84*	*3.08*
e) other	*3.19*	*3.19*	*3.19*
f) overheads	*1.45*	*1.57*	*1.70*
3. Farm costs (a+b+c+d+e+f)	16.09	16.57	17.14
4. Total costs of production (1+2+3)	**88.62**	**89.11**	**89.68**
5. Total revenues	**92.95**	**92.95**	**92.95**
6. Net income (5-4)	**4.33**	**3.84**	**3.27**
7. Profitability (%), (6/4×100)	4.88%	4.31%	3.65%

Source: own calculation.

In the case of a 7 day down-time period (7.4 annual cycles) the production cost is 88.26 EUR/100 kg. By contrast, in the case of a 16 day down-time period (number of annual cycles 6.3) production cost increases to 89.35 EUR/100. It means that once the down-time period is increased by one day, specific costs grow by EUR 0.12. As the number of rotations exercises no effects on specific revenues (what practically stands for selling price) attainable income changes proportionately with the cost, but in the opposite direction. What does it mean on an annual basis per one m^2? Once the down-time period is reduced by one day, production costs increase by EUR 4.28, revenues grow by EUR 4.84 on average, generating EUR 0.55 higher incomes per m^2.

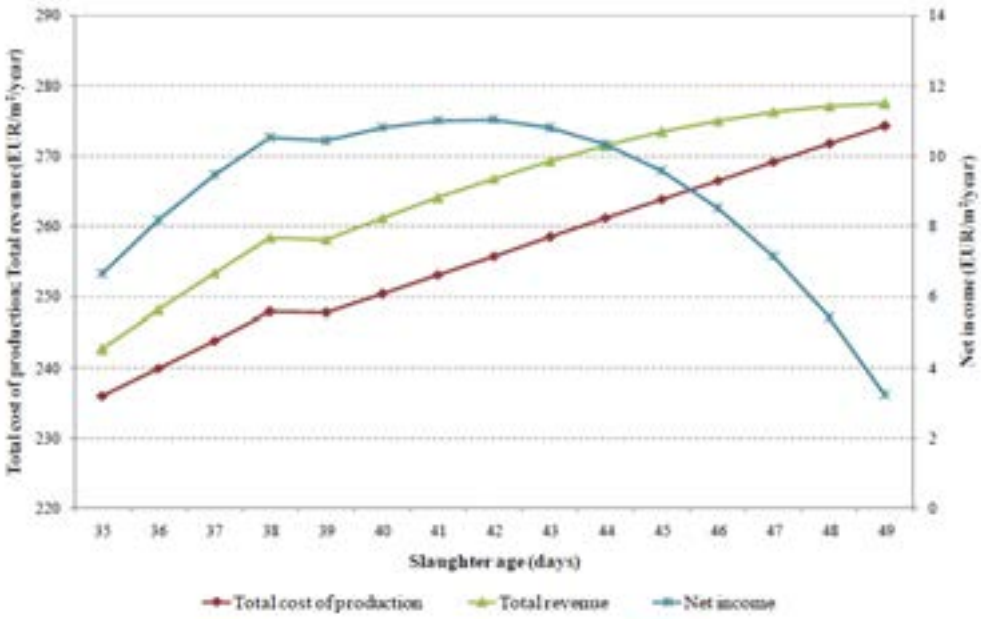
Economic effects of slaughter age

Following the introduction of the impact of the length of the down-time period the effects of the length of the production period on the division of income in broiler production are to be investigated. The length of the production time exerts a fundamental impact on final body weight and thus on the average weight, average daily weight gain plotted against the curve of body weight gain, the volume of utilized feed plotted against the feed intake curve and consequently specific feed utilization and mortality rate. The increase of stocking density (live weight on one m^2) related to the length of the production period above the optimal level (regarding animals' well-being) can, on one hand, negatively influence the development of production indices; on the other hand, the maximum value stipulated by the EU 42 kg/m^2 shall not be exceeded. Our calculation considered these latter factors set against the variation of mortality rate, with constant placement density. Due to professional reasons, the removal of 3 birds on day 36th to improve stocking density was merely applied if the production period was 39 day long or longer.

Figure 2. presents the development of annual production costs, revenues and incomes as a function of the length of the production period. The development of incomes clearly demonstrates that production time is not linearly related to the total sum of costs incurred and the volume of attainable revenues. Therefore, incomes have a maximum value which can be achieved if the production period is 41-42 day long. Under Baéza et al. (2011) experimental

conditions, economic profit evaluated through the net gain reached a maximum at 42 days also. Consequently, this optimal condition is to be provided in practice. It is evident that after 42-43 days income falls sharply; moreover, the production becomes loss-making after day 50. Revenues, in contrast to the progressive growth of body weight, show a degressive growth pattern due to the growing rate of mortality. Simultaneously, costs rise continuously as a function of production time.

Figure 2. Effects of production period length on annual cost and income indicators



Source: own calculation

Realizable income and related physical efficiency indicators are presented in further detail in Table 3. Average bodyweight, average daily weight gain and yield increased degressively with age. By contrast, FCR and mortality increased progressively with age. EPEF, which expresses the overall production profile decreased progressively with age. Production cost per a unit of production first decreases and then increases as a function of age. The lowest value (89.08 EUR/100 kg) can be found at day 41. By contrast, the net income per m^2 per year offers a better picture about economic performance. Its value increases degressively and starts to fall progressively after day 42. The presented correlations are of general value, but concrete values are solely valid if technological and economic prime data are considered.

Table 3. Attainable income and related physical efficiency indicators with different production periods

Specification	Unit	Slaughter age (days)				
		35	39	42	46	49
Average bodyweight[1]	kg/pcs	1.98	2.28	2.50	2.78	2.99
Average daily weight gain[2]	g/day	55.23	58.57	60.64	62.83	64.08
Feed conversion ratio (FCR)	kg/kg	1.71	1.79	1.86	1.96	2.05
Mortality	%	3.85	4.23	4.53	5.29	6.54
Yield	kg/m^2/year	261.0	277.6	286.9	295.8	298.5
European Production Efficiency Factor (EPEF)[2]	-	317.7	315.9	311.6	300.6	286.8
Annual broiler cycle	cycle/year	7.43	6.87	6.50	6.07	5.78
Total cost of production	EUR/100 kg	90.41	89.20	89.11	90.07	91.87
Net income	EUR/m^2/year	6.63	10.43	11.02	8.51	3.21

Source: own calculation.

Note: [1]It also contains the weight of chickens removed on day 36. [2]Average daily weight gain = Average bodyweight/Weighted average age days×1000. [2]EPEF = (100–Mortality)×Average bodyweight/(FCR×Weighted average age days)×100.

Following the separate investigation of the effects of the down-time period and the length of the production period their joint effects should also be studied (Table 4). The highest value of the annual attainable net income (15.5 EUR/m^2/year) can be realized if the production period is 41 days and the down-time period is 7 days. Reductions and increases in the production period both lead to income decline. The increase of the down-time period also lowers the volume of realizable income. Excessive, emergency rearing causes a drastic fall in attainable income. If the production period is longer than 46 days, the attainable income will not even achieve 10 EUR/m^2 with the exception of the application of the shortest possible down-time period. With a 16-day down-time period net income of 10 EUR/m^2 are not realizable, only when a 42-day production period is used. If this period is 14 days, net income exceeding EUR 10 can solely be attained if the production period is 38-44 days long.

Table 4. Development of annual net income as the function of down-time period and production period length (at average prices in 2012)

Net income *(EUR/m²/year)*		Down-time period *(days)*									
		7	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Slaughter age *(days)*	**35**	11.0	10.3	9.6	9.0	8.3	7.7	7.2	6.6	6.1	5.6
	36	12.7	11.9	11.2	10.6	9.9	9.3	8.7	8.2	7.6	7.1
	37	14.1	13.3	12.6	11.9	11.3	10.7	10.0	9.5	8.9	8.4
	38	15.2	14.5	13.7	13.0	12.4	11.7	11.1	10.5	10.0	9.4
	39	15.0	14.3	13.5	12.9	12.2	11.6	11.0	10.4	9.9	9.3
	40	15.3	14.6	13.9	13.2	12.6	12.0	11.4	10.8	10.3	9.7
	41	15.5	14.7	14.1	13.4	12.8	12.2	11.6	11.0	10.5	9.9
	42	15.4	14.7	14.0	13.4	12.7	12.2	11.6	11.0	10.5	10.0
	43	15.0	14.4	13.7	13.1	12.5	11.9	11.3	10.8	10.3	9.8
	44	14.4	13.8	13.1	12.5	11.9	11.4	10.8	10.3	9.8	9.3
	45	13.5	12.9	12.3	11.7	11.1	10.6	10.1	9.6	9.1	8.6
	46	12.2	11.6	11.1	10.5	10.0	9.5	9.0	8.5	8.1	7.6
	47	10.6	10.0	9.5	9.0	8.5	8.0	7.6	7.1	6.7	6.3
	48	8.6	8.1	7.6	7.1	6.7	6.2	5.8	5.4	5.0	4.6
	49	6.1	5.6	5.2	4.8	4.4	4.0	3.6	3.2	2.9	2.5

Source: own calculation

Note: The table demonstrates the development of annual net income as the function of the down-time period and the production period length. Green indicates favourable, yellow medium and red unfavourable values. In the investigated range of the down-time and the production period the maximum value of attainable annual net income is 15.5 EUR/m²/year (specifically 4.75 EUR/100 kg), while the minimum value of that is 2.5 EUR/m²/year (specifically 0.87 EUR/100 kg).

Conclusion

In contrast with the economic correlations presented above, it can be concluded that producers can primarily reduce the length of the down-time period. It requires proper work organization, technological discipline, adequate processing and hatching capacities (good connections) and favourable plant facilities. However, only limited production period related options are available for them. It is the processors who determine the required slaughter weight through the market, which concretely determines the length of the production period. The findings underline the fact that if slaughterhouse capacities and connections are not favourable and the scheduled (proper) date of animal removal is delayed by 1-2 days, it can significantly reduce the volume of realizable income for producers. This can significantly increase the risks for those producers which are not included in the integration network.

Nevertheless, it should be emphasised that within integration, in case of capital uniformity, processing companies are responsible to identify the right slaughter weight for the maximization of production chain income where a good combination of live performance and meat yield are critical. As Hughes (2012) underlined the days where live performance was the only thing that mattered in breed decisions are long gone. All these facts highlight the significance of research activities and investigations of the correlations in the production

chain, value generation and the continuous monitoring of submarkets (Markovszky, 2004; Molnár, Xavier, 2009; Szőllősi, 2009; Cehla et al., 2011).

In the processing phase of the production chain the key objective is to minimize the specific costs of processing, as this is the way to achieve the highest possible income if prices are given. This is the income which can and should be partly returned to broiler producers. Within integration, potentials are available to realize this. One way for the reduction of specific processing costs is the improvement of yield indicators in relation to processing technology and live weight per hook. This expressly means a shift toward valuable chicken breast in the case of heavier chickens. Naturally, due to the mentioned causes, high average weight is to be achieved under safe conditions, at a low mortality rate with a low FCR, during a short production period. This can merely be guaranteed by in-depth management knowledge, outstanding technological level, with constant, good quality chicks and feed. It means that simultaneous investments should be made into the knowledge base and the development of technological level as well.

Literature

1. Aliczki, K., Bárány, L. (2013): *Versenyképes-e a magyar húscsirketermelés?* Baromfiágazat, vol. 13(3), pp. 6-8, GBT Press, Budapest.
2. Aviagen Ltd. (2012): *Ross 308 Broiler: Performance Objectives, 2012,* pp. 1-12, Aviagen Group, Huntsville, available at: http://en.aviagen.com/assets/Tech_Center/Ross_Broiler/Ross308BroilerPerfObj2012R1.pdf.
3. Baéza, E., Arnould, C., Jlali, M., Chartrin, P., Gigaud, V., Mercerand, F., Durand, C., Méteau, K., Le Bihan-Duval, E., Berri, C. (2011): *Influence of Increasing Slaughter Age of Chickens on Meat Quality, Welfare, and Technical and Economic Results,* Journal of Animal Science, vol. 90, pp. 2003-2013, American Society of Animal Science, Champaign, available at: http://www.journalofanimalscience.org/content/90/6/2003.full.pdf+html.
4. Cehla, B., Kovács, S., Nábrádi, A. (2011): *Exploitation of relations among the players of the mutton product cycle,* Apstract, vol. 4(1-2), pp. 129-134, Agroinform Publishing House, Budapest.
5. Esmail, S. H. (2013*): Factors Affecting Feed Intake of Chickens,* World Poultry, vol. 29(1), pp. 15-17, Read Business bv, the Netherlands.
6. FAO (1999): *Livestock and Environment Toolbox,* Food and Agriculture Organisation of the United Nations FAO, Rome, available at: http://www.fao.org/ag/againfo/programmes/en/lead/toolbox/Index.htm.
7. Goliomytis, M., Panopoulou, E., Rogdakiset, E. (2003): *Growth Curves for Body Weight and Major Component Parts, Feed Consumption, and Mortality of Male Broiler Chickens Raised to Maturity,* Poultry Science, vol. 82, pp. 1061-1068, Poultry Science Association, Champaign, available at: http://ps.oxfordjournals.org/content/82/7/1061.full.pdf.
8. Gunasekar, K. R. (2006): *Formulating Feeds for Broiler Performance,* The Poultry Site, 24th April 2006, available at: http://www.thepoultrysite.com/articles/560/formulating-feed-for-broiler-performance.

9. Grepay, N. A. (2009): *The Main Factors Affecting Poultry Production in Libya,* Acta Scientiarum Pololonorum Oeconomia, vol. 8(4), pp. 43-49, Warsaw University of Life Sciences, Warszawa, available at: http://www.aqua.ar.wroc.pl/acta/pl/full/14/2009/000140200900008000040004300049.pdf.
10. Horne, P. L. M. van (2013): *Competitiveness of the EU Poultry Meat Sector,* LEI Report 2013-068, LEI Wageningen UR, The Hague, pp. 34-43.
11. Hughes, J. (2012): *The Economic Importance of Meat Yield in processing,* World Poultry, vol. 28(10), pp. 36-37, Read Business bv, the Netherlands.
12. Kleyn, R. (2002): *Strategies for Managing Expensive Feed on Farm,* SPESFEED Ltd, Rivonia, South Africa, available at: http://spesfeed.com/?wpdmact=process&did=NDQuaG90bGluaw.
13. Markovszky, Gy. (2004): *A termékpálya integrációk vizsgálatának lehetőségei,* Gazdálkodás, vol. 48(3), pp. 25-31, Nemzeti Agrárszaktanácsadási, Képzési és Vidékfejlesztési Intézet, Budapest.
14. Molnár, A., Xavier, G. (2009): *Performance imbalances in the chain: EU traditional food sector,* Apstract, vol. 3(3-4), pp. 7-11, Agroinform Publishing House, Budapest.
15. Popp, J. (2014): *A baromfiágazat globális helyzete* és *kilátásai (II),* Baromfiágazat, vol. 14(1), pp. 4-11, GBT Press, Budapest.
16. Rezitis, A. N., Stavropoulos, K. S. (2009): *Modelling Pork Supply Response and Price Volatility: The Case of Greece,* Journal of Agricultural and Applied Economics, vol. 41(1), pp. 145–162, Southern Agricultural Economics Association, available at: http://ageconsearch.umn.edu/bitstream/48764/2/jaae209.pdf.
17. Research Institute of Agricultural Economics (2013): *Market Price Information System*, Budapest, Hungary, available at: https://pair.aki.gov.hu/web_public/general/home.do.
18. Samarakoon, S. M. R., Samarasinghe, K. (2012): *Strategies to Improve the Cost Effectiveness of Broiler Production,* Tropical Agricultural Research, vol. 23(4), pp. 338-346, Postgraduate institute of Agriculture University of Peradeniya, Sri Lanka, available at: http://www.sljol.info/index.php/TAR/article/view/4869.
19. Schmidt, G. A. (2008): *The Effect of Broiler Market Age on Performance Parameters and Economics,* Revista Brasileira de Ciência Avícola, vol. 10(4) pp. 223-225, Fundação APINCO de Ciência e Tecnologia Avícolas, Campinas, available at: http://www.redalyc.org/articulo.oa?id=179713996005.
20. Szőllősi, L. (2009): *The Operation of the Hungarian Broiler Product Chain,* Apstract, vol. 3(5-6), pp. 47-50, Agroinform Publishing House, Budapest.
21. Wang, B. Y., Chien, L. H., Roan, S. W. (2012): *POMA-BROILER: A Computer Simulation Model to Evaluate the Optimal Market Age of Broilers,* Journal of Animal and Veterinary Advances, vol. 11(14), pp. 2493-2502, Medwell Journals, available at: http://www.medwelljournals.com/abstract/?doi=javaa.2012.2493.2502.
22. Ziggers, D. (2013): *Biomin's World Nutrition Forum Tackles the Four P's,* World Poultry, vol. 29(1), p. 13, Read Business bv, the Netherlands.
23. Zoltán, P. (2010): *Jó indítás, eredményes hizlalás,* Baromfiágazat, vol. 10(4), pp. 36-42, GBT Press, Budapest.

Review Article

Economics of Agriculture 3/2014
UDC: 339.439.5(497.11)

THE ANALYSIS OF ASPECTS OF FOOD INDUSTRY COMPETITIVENESS IN SERBIA

Cariša Bešić[1], Dragan Ćoćkalo[2], Dejan Đorđević[3], Srđan Bogetić[4]

Summary

Competitive ability of the company in modern business conditions is difficult to achieve and easy to lose. The reason for this attitude is the fact that the rapid technological improvement enabled the technology with becoming available to everyone in the world under reasonable terms. Competitiveness of domestic companies is very low. Insufficient application of knowledge, low technological level of enterprises, unproductiveness and inefficiency are just part of the problem. Food industry in Serbia shares the fate of domestic economy – non-competitiveness is one of the main factors which affect the crisis in agricultural sector. The authors of this paper, based on the available national and international statistical data, have done analysis and display of competitive opportunities of domestic economy in general and in particular sectors of food industry. The authors also indicate the possibility of improving competitiveness.

Key words: *competitiveness, food industry, quality, management.*

JEL: *L15, Q13*

Introduction

Competitive ability of the company with modern business conditions is difficult to achieve and easy to lose. The reason for this attitude is in the fact that rapid technological advances enabled technology to be available to everyone in the world under reasonable terms. In

1 Cariša Bešić, Ph.D., Associate Professor, University of Kragujevac, Faculty of technical science, 32000 Čačak, Svetog Save Street no. 65, Serbia, Phone: +381 60 369 96 96, E-mail: carisa.besic@sbb.rs

2 Dragan Ćoćkalo, Ph.D., Associate Professor, University of Novi Sad, Technical faculty "Mihajlo Pupin" in Zrenjanin, 23000 Zrenjanin, Đure Đakovića Street bb, Serbia, Phone: +381 62 801 97 41, E-mail: cole@tfzr.uns.ac.rs

3 Dejan Đorđević, Ph.D., Full Professor, University of Novi Sad, Technical faculty "Mihajlo Pupin" in Zrenjanin, 23000 Zrenjanin, Đure Đakovića Street bb, Serbia, Phone: +381 62 801 97 26, E-mail: djole@rocketmail.com

4 Srđan Bogetić, Ph.D., Professor, Belgrade Business School, 11000 Belgrade, Kraljice Marije Street no. 73, Serbia, Phone: +381 64 125 42 92, E-mail: sbogetic@yahoo.com

addition, global economic crisis has highlighted the necessity for creating new business models. Competitiveness and business excellence are interconnected phenomena. A company cannot be competitive if it is not business excellent and vice versa.

Competitiveness of domestic enterprises is on a very low level. Insufficient application of knowledge, low technological level, unproductiveness and inefficiency are just part of the problem that domestic companies face.

Food production is a significant export potential of Serbia, but it is not implemented enough due to weak competition of the companies and products themselves. The local food industry contributes significantly to domestic exports. The greatest export contribution in 2013 yielded the following areas: motor vehicles and trailers - a share of 17.6 %, followed by the production of food products - accounted for 13 % and agricultural production, hunting and related service activities - share of 8.3 %. When we observe the period from January until November 2013 compared to the period from January until November 2012, we can see that food products grew by about 8 %. As has been showed by official statistics, the food industry is located immediately behind the production of motor vehicles in the share of exports, and has recorded a growth of production. On the other hand, although these are positive indicators, the domestic food industry has not achieved all its features. One of the main problems of companies in the food industry, and the main problem of the domestic economy as well, is the lack of competitive abilities. When we talk about specific aspects of competitiveness which should be improved in the domestic economy, we must emphasize quality, productivity and innovation.

The Analysis of the Aspects of Competitiveness in Domestic Economy

Since the beginning of the 80s, the local economy has had problems with productivity improvement. Improving the productivity is certainly a pressing problem in most countries in transition, as well as in the local economy. The problem of productivity was not reported to the local economy during the transition, but it had been present before. The problems of labor productivity of domestic enterprises were the result of inadequate ways of doing business, which was not based on market principles. Thus, it resulted in unrealistically high prices of certain products, which were not competitive on the world market. Therefore, domestic enterprises, in order to successfully compete on the world business stage, lowered export prices, while the difference was paid by domestic consumers through high prices. Outdated technology, poor quality, unattractive packaging and high prices are the main reasons why Serbian products cannot compete with other competing products in the international market (Đorđević et al., 2011).

According to the list of the World Economic Forum in 2013, Serbia was ranked on the 101st place out of the 148 countries that had been reviewed. Serbia is on the 95th place on the list for 2011 and 2012, which means that there is development in competitiveness, but in a negative sense. An interesting fact is that this year, Serbia found itself in the company of Algeria (100th place) and Guyana (102nd place). Our last year "neighbors", also significantly changed their status - Argentina is "down" for 10 places (now on 104th), whereas Greece moved up five

places (now 91st). Table 1 shows the ranking of the countries of the Western Balkans in 2009-2013. Serbia and Slovenia recorded a decline on the list - Slovenia has recorded a significant decline in comparison to other studied countries. Also Montenegro and Croatia recorded a slight decline from 2009-2013.

Table 1. Ranking Western Balkan countries according to competitiveness in the period 2009-2013

Country	Rank in 2009.	Rank in 2010.	Rank in 2011.	Rank in 2012.	Rank in 2013.
Slovenia	37	45	57	56	62
Montenegro	62	48	60	72	67
Croatia	72	77	76	81	75
Macedonia	84	79	79	80	74
Serbia	93	96	95	95	101
B&H	109	102	100	88	87

Source: World Economic Forum, 2008-2013.

From the countries from our close environment, in 2013, Hungary is situated on the 63rd place, Bulgaria on the 57th, Romania is situated on the 76th, Greece, as has already been mentioned, is placed on the 91st and Albania on the 95th. As can be seen from Table 1 Serbia has a problem with global competitiveness in the last five years, and it was particularly evident in the 2013 - Serbia had the worst position in relation to all compared countries, not only in the Western Balkans, but also in the neighbouring area of south Eastern Europe.

Table 2 provides a ranking of the Western Balkan countries according to competitiveness indicators. The basic requirements of competitiveness consist of the following indicators - institutions, infrastructure, macroeconomic environment, health and primary education, high education and training, goods market efficiency, labor market efficiency, efficiency of capital markets, technological capacity and market size. As can be seen, Serbia is slightly better when it comes to efficiency of doing business. When it comes to innovation, according to World Economic Forum, all countries in the world are divided into five groups. The first group consists of countries whose economies are based on application and development of innovative activities (this group consists of 37 countries). THE second group consists of countries in transition from the first to the third group (this group has 20 countries) and the fourth group consists of countries in transition from the third to the fifth group of countries (in this group there are 22 countries). Serbia is located in the third group (economy keeping efficiency), together with Montenegro, Romania, Bulgaria, Macedonia, Bosnia, Albania, Indonesia, and Chile. Croatia is in the fourth group (transition from efficiency to innovation), while Slovenia is located in the fifth group of countries that stem (economy driving innovation and sophistication). The fifth group mainly consists of the most developed countries in the world.

Table 2. Ranking Western Balkan countries according to indicators of competitiveness in the year 2013

Country	Rank in 2013.	Ranking according to primary requirements	Ranking according to the efficiency of business	Ranking according to innovation
Slovenia	62	37	62	49
Montenegro	67	68	72	70
Croatia	75	61	68	80
Macedonia	74	70	76	94
Serbia	101	106	92	125
B&H	87	87	89	89

Source: World Economic Forum, 2008-2013.

The World Economic Forum provides an analysis in the field of sustainable development, from the aspect of social sustainability and sustainability in environmental protection (see Table 3. for the Western Balkan countries). The main pillars of the social indices of sustainable development are: income, youth unemployment, access to sanitation, access to potable water, access to health services, social welfare, own contribution of gray economy in the economy, social mobility, the overall unemployment rate. The main pillars of the index in protecting the environment include power of legislation, protection of land, the number of ratified international protocols and agreements, availability of water for agriculture, exposure to carbon dioxide ratio for fishing, concentration of particles in the air quality of the environment.

Table 3. Ranking Western Balkan countries according to the analysis of the factors of sustainable development in 2013

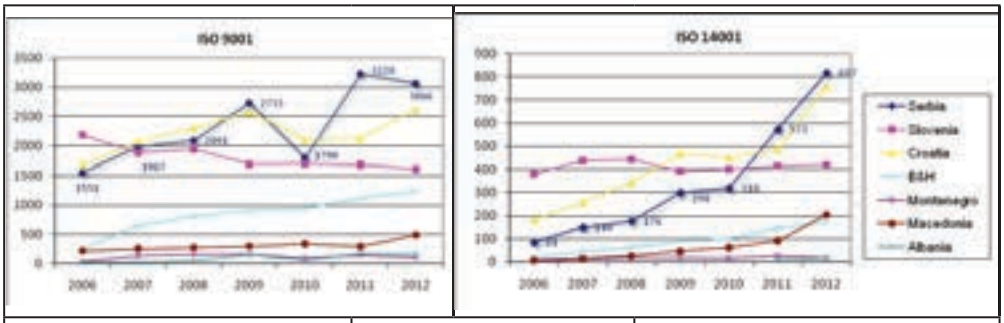
Country	Ranking according to social sustainability	Ranking according to sustainability in the field of environment	A change in comparison to the previous period
Slovenia	4.68	4.60	Slight increase
Montenegro	4.13	4.13	Stagnation
Croatia	4.09	4.13	Stagnation
Macedonia	3.99	3.83	Stagnation
Serbia	3.58	3.74	Stagnation
B&H	3.66	3.44	Slight decrease

Source: World Economic Forum, 2008-2013.

Considering standards and certification, the situation in South East Europe is still unsatisfactory. For instance, although there was noted an uptrend in this field, especially in Romania which is one of the countries with the biggest number of certificates, on average, the number of certificates is still small. As for the number of certified organizations on domestic market, there has been a slight decrease from the previous year, but Serbia is still a leading country of the Western Balkans region (Figure 1). The number of certified organizations in Serbia has contributed to a better position of our economy when it comes to improving

business efficiency. As a parameter of global competitiveness – based on the level of business efficiency, Serbia is on the 92nd position, while regarding the level of innovative spirit, it is on the 125th position of the global scale. On the other hand, the number of certified organizations in Serbia is not nearly satisfactory compared to the other SEE countries, such as Hungary, Romania, Bulgaria and Greece.

Figure 1. Number of certificates of ISO 9001 and ISO 14001 in the Western Balkans



Country	ISO 9001 certificates in 2012.	ISO 14001 certificates in 2012.
Serbia	3,066	817
Croatia	2,614	760
Slovenia	1,614	420
B&H	1,239	174
Macedonia	482	204
Albania	154	19
Montenegro	102	16

Source: ISO, 2006-2012.

Productivity accounts for 42% of European average. The reason is insufficiently good organization of business, technological backwardness and the lack of knowledge, but the consequences are non-competitiveness and a decrease in consumption of employment. The most productive companies are those with the equipment and machinery of the top quality. These are part of the food and pharmaceutical industries and companies with constant capital, which together accounts for 8.5 to nine per cent of Serbian industry. The average age of vehicles in Serbia is 29.5, which is two decades behind the EU average (Table 4). This is determined on a representative sample of 154 small, medium and large companies in six industries with similar production programmes. Austria has been taken as a criterion since it is approximately similar to the natural, social and population characteristics of Serbia. The companies in the field of textiles (35), followed by companies from the machine industry (34.5 years). The pharmaceutical companies lag behind the least with a delay of 21 years. Regionally observed, equipment, tools and other productive resources are the most obsolete in the region of southern Serbia (41 years), and the best situation is in the region of Bačka (lag of 18.5 years). In Belgrade, technological lag is 20.5 years.

Table 4. The average age of machines and equipment in Serbian industry sector

Industry Sector	The Average Age (years)
Textile Industry	35.1
Machine Industry	34.6
The Pharmaceutical Industry	21
Food Industry	27.1
Chemical Industry	28.6
The Construction Industry	30.5

Source: Ekonomist EMG, 2012.

The research of the Union of Employers of Serbia, which deals with the analysis of effective work in the local companies, has been conducted on a sample of 242 companies that employ more than 15,000 workers. The survey results point to the fact that few people in Serbia who work full-time, i.e. 8 hours a day - account only for 9.4%. Furthermore, 17.4% of workers work effectively for 5 hours per day, 16.5% of workers work effectively for 3 hours per day, and 1.2% of workers work effectively for 1 hour a day. In domestic enterprises 23.2% of workers use a break for 1 hour, and 22.9% of workers use a break of 30 minutes.

Last but not least, innovation is an important factor in establishing, maintaining and developing competitive ability of companies. Innovative activity requires substantial financial resources, and local businesses have had a chronic lack of money since almost three decades ago. This indicates that domestic companies invested very little in research and development activities in that period.

The Analysis of Competitiveness of Domestic Food Industry

Domestic food processors share the fate of domestic economy. The problems of these companies are numerous, but it is believed that the lack of competitiveness is one of the main factors affecting the agricultural sector crisis (Pejanović et al., 2013).

The average age of equipment in the food industry is somewhat better than the rest of the national economy and is 27.1 years, while the average age of vehicles in domestic economy is 29.5 years. The fact that the average age of vehicles in the most developed EU countries ranges from 5.1 in Germany to 9.1 in Italy illustrates this phenomena best. The countries which have completed the process of transition, such as Romania and Bulgaria, the average age of vehicles is 16.9 and 17.3 years (Ekonomist EMG, 2012).

Like most companies in the field of manufacturing, domestic food companies produce products that fall into the products with low manufacturing prices and a significant portion is in the lower stages of finalizing the product. The structure of exports in accordance to the product structure is given in Table 5.

When it comes to the success of enterprises in the food industry (on the list for 2012), there are only two companies in this field - Sunoko Ltd. Novi Sad on the fifth place and Imlek AD Beograd on the tenth place (Table 6). Thus, in the national context, the enterprises in the food industry cannot compete with the companies from the fields of automotive

industry, petrochemicals, telecommunications, and chemical industry. When it comes to the most successful exporters in 2013 (SIEPA, 2014b), we cannot find a company from food industry among the first fifteen domestic exporters.

Table 5. The export of products in the period from January to December 2012

No.	Product	Export given (in million USD)
1	Yellow corn	541
2	White sugar	164
3	Raspberry	136
4	Sunflower oil	96
5	Non-alcoholic beverages	64
6	Soya oil	55
7	Beer (bottled)	53
8	Wheat	51
9	Cherry	48
10	Wheat flour	45

Source: Serbian Chamber of Commerce, 2014a

Table 6. The most successful enterprises in Serbia in 2012

No.	Company	Net income (in 000 RSD)	The number of employees
1	NIS	49,456,516	7,577
2	Telekom Srbija AD	11,251,155	9,061
3	Telenor DOO	10,580,559	1,131
4	Tarket DOO	9,770,211	729
5	Sunoku DOO Novi Sad	6,077,056	471
6	Pertil DOO Bačka Palanka	3,051,771	109
7	HE Đerpad DOO Kladovo	2,996,167	1,001
8	Hemofarm AD Vršac	2,790,789	1,688
9	Tigar Tyres DOO Pirot	2,758,621	2,067
10	AD Imlek Beograd	2,670,444	828

Source: Biznis i finansije, 2014.

One of the problems caused by inadequate competitiveness of domestic enterprises in the food industry is a weak market position of domestic brands. Insufficient investment in marketing activity during the transition period, combined with the subsequent entry into the standardization process sacrificing business, resulted in insufficient recognisability of brands of domestic food enterprises beyond Serbia. According to some research (Biznis i finansije, 2005), domestic brands are very poorly recognized in the Western Balkans. Specifically, the study included an analysis of recognition brands in Slovenia, Croatia, Bosnia and Serbia. The study showed that among the top ten brands there are only three local brands and one from Slovenia (Paloma), Croatia (Vegeta) and Serbia (Grand coffee), and the rest were international brands.

Regarding the implementation of international standards of management in the organizational structure of local companies in food industry and according to the Serbian Chamber of Commerce (2014b), 202 companies have a type of international certificate. The majority of companies in the food industry, 176 of them, own the certificate of implemented HACCP system, followed by 64 enterprises with a certificate of ISO 9001, and 22 companies that have introduced a certificate of ISO 22001. As for the companies that belong to agricultural sector, 15 of them possess some international management standards. According to the ISO Survey in 2012 and according to ISO 22000 there were 172 certified enterprises. According to the Ministry of Agriculture, 800 companies have applied for certification, and nearly 450 have already received HACCP certification (SIEPA, 2014a). As can be seen, the data significantly diverge from source to source, but it is significant that more and more companies realize the importance, relevance and necessity of introducing quality standards in order to enhance their business not only in Serbia but also for the sake of export to foreign markets.

Clusters represent one certainly important way of improving competitiveness of domestic enterprises (Ilić, 2006; Zdravković, 2011; Milojković, Stojković, 2012). Only four clusters out of the total number of all organized ones in Serbia are related to agriculture and food industry. Those clusters are: BIPO Cluster - Balkan-Black Sea Industry of Agricultural Machine, Sumadijski flower - the cluster of flowers manufacturers, Agribusiness and food producers Cluster - Pollux. The first two clusters belong to the second development phase while the other two include the initial initiative from the first phase (Đorđević et al., 2012).

The Possibilities for Improving the Competitiveness

The application of modern methods and techniques of management is certainly the easiest way to improve competitiveness of domestic enterprises. Also, the establishment of cooperation between large and small and medium-sized enterprises, the formation of strategic alliances and clustering are also directions for the development of competitiveness, especially in the food industry.

According to some beliefs, the main directions of development of competitiveness of agribusiness in the future can be observed (Milićević, 2013):

- positioning of large agribusiness corporations on domestic market,
- export of highly profitable products,
- promotion of agribusiness in small and medium-sized enterprises,
- establishment and development of cooperatives in agribusiness,
- protection of domestic markets and producers.

Faster and more comprehensive foster from international standards and integrated management systems should be certainly added as well as investing in domestic brands development. According to the famous theorist of marketing, Philip Kotler (2003), marketing skills are mostly reflected in the art of creating a brand. When something is not a trademark, it will probably be considered a commodity. Then the price is important. When

the price is the only factor, a manufacturer that has the lowest cost is the only who gains. Great brands are the only path to a permanent, above-average profitability. Great brands do not offer only rational, but also emotional benefits.

The research results (Đorđević et al., 2013) obtained from the analysis of the attitudes of young people in relation to understanding the success of business practices of local businesses, show reflection of future professionals and managers and indicate the following:

- 45.7% of respondents believe that competitiveness of domestic enterprises does not meet the requirements set by the international environment, and 45.17% think that competitiveness of domestic enterprises partially meets the requirements set by the international environment, while only 5.56% of respondents believe that domestic firms meet these requirements and only 3.58% said that competitiveness is satisfactory;
- The most important factors that are missing in development of competitiveness of domestic enterprises are: new technology (12.42%), education (12.39%), motivation of employees (10.75%), financial support (9.36%) and state's institutional support (7.63%). When it comes to assessing the level of innovation of domestic enterprises, the majority of respondents, 46.49% believe that local companies partially fulfil this factor of competitiveness, 36.95% of them believe that domestic companies do not meet competitiveness factor, 7.68% of respondents believe that domestic enterprises are innovative, while only 8.87% of respondents believe that the local companies are very innovative;
- The respondents, as necessary elements for the development of competitiveness of domestic enterprises, listed standardization of business quality (18.67%), application of modern methods and techniques of management (17.72%), investment in development of national brands (12.32%) and the purchase of modern equipment and technology (11.48%).

Based on the presented results we can conclude that young professionals in the field of management are aware of the fact that standardization of the quality of operations and the application of modern methods and techniques of management represent the strategic framework for the establishment of competitiveness of domestic enterprises, as well as competitiveness of domestic enterprises and the degree of innovation. According to the results of another study which analyzed the application of modern management techniques in domestic enterprises (Bešić et al., 2013), based on the analysis of the attitudes of local officials, the main obstacles in the development of competitiveness of domestic enterprises can be the following: lack of financial capital (20%), lack of knowledge (18.6%), outdated equipment and technology (15.9%), insufficiently stimulating business environment (13.1%), inadequate use of modern methods and techniques of management (12.4%). Necessary elements for development of competitiveness of domestic business organizations are: improving business productivity (21.3%), permanent training of management and employees (18.4%), investment in development of national brands (15.4%) growth of entrepreneurial culture in business environment (14.7%), creating strategic alliances (9.6%). According to research results, methods and management techniques to be applied in domestic business organizations are:

- Database Management (18.4%),
- Quality Management System (17.6%),
- Corporate Social Responsibility (17.6%),
- Relationship Marketing (16.8%), and
- Benchmarking (12.6%).

These data suggest that in times of crisis managers are fully aware of the fact that investment in employees and their skills, as well as investment in modern technology and equipment, are the most important factors defining the competitive viability of enterprises in modern business.

Future companies will be made of teams which will build and use their knowledge about market requirements and customers, suppliers and partners to be able to respond quickly through sophisticated electronic links to changes in fashion and economic circumstances. The process of value creation will be freed from all unnecessary actions (Acharol, Kotler, 2012; Hult, 2012; Mele et al., 2014).

Conclusions

Domestic companies are not sufficiently competent on the international market, and the main problem is the lack of competitive ability and poor productivity of domestic companies as well as non-standardized product quality. Productivity is low because of obsolescence of equipment and technology solutions, on one hand, and because of inadequate employment, on the other hand, especially in state-owned enterprises and in public sector.

One of the problems of food industry is still not enough established competition on foreign markets (Pejanović et al., 2009). There are several reasons for this, but the most important are: disorganized appearance on foreign markets, lack of funding performance in foreign markets, the continued product quality and the lack of certain certificates (HACCP, GLOBALGAP, Halal certification, etc.), (Đuran, 2011).

According to Besic (2006), one of the most important problems of domestic economy, which in large extent causes poor market performance of our enterprises on the international market is certainly inadequate use of knowledge, primarily referring to the knowledge necessary for the effective management of enterprises. Management is most responsible for the affairs of the organization. The greatest responsibility of managers is to properly manage the organization's resources to achieve profit.

In order to improve competitiveness of domestic economy, it is necessary to work more on expansion of ideas of quality improvement on national level. On the other hand, every business organization needs to become aware of the fact that the only way to establish, maintain and develop its competitive capabilities assumes constant improving quality performance and achieving the objectives of business excellence.

References

1. Acharol, R. S., Kotler, P. (2012): *Frontier of the marketing paradigm in the third millennium*, Journal of academic marketing science, vol. 40, no. 1, pp. 35-52, Springer.
2. Bešić, C. (2006): *Benčmarking – put ka poslovnoj izvrsnosti*, Zadužbina Andrejević, Beograd, Srbija.
3. Bešić, C., Krnjević-Mišković, Z., Đorđević, D. (2013): *The role of knowledge in the development process of competitive ability of domestic companies on the global market*, Proceedings, III International Conference LEMiMA 2013, Belgrade, Serbia, pp. 214-220.
4. Biznis i finansije (2014): *Biznis Top 2012/2013*, Beograd, Srbija, (available at: http://bif.rs/2013/11/biznis-top-201213 accessed at: 13.03.2014)
5. Biznis i finansije (maj 2005): *Najuspešnije marke u Srbiji i regionu*, Biznis i finansije, Poseban dodatak - Hrana, str. 21, Beograd, Srbija.
6. Đorđević, D., Bogetić, S., Ćoćkalo, D., Bešić, C. (2012): *Cluster development in function of improving competitiveness of SMEs in Serbian food industry*, Economics of Agriculture, vol. 59, no. 3, pp. 433-446, IAE, Belgrade, Serbia.
7. Đorđević, D., Ćoćkalo, D., Bogetić, S. (2011): *Novi model upravljanja i razvoj konkurentske sposobnosti domaćih preduzeća,* Zbornik radova Konferencije JUSK ICQ 2011, IV konferencija Razvoj poslovne izvrsnosti i konkurentnost domaćih preduzeća, Beograd, Srbija, pp. 71-74.
8. Đorđević, D., Ćoćkalo, D., Bogetić, S. (2013): *Perspektive razvoja konkuretnosti domaćih preduzeća*, Zbornik radova Međunarodne konvencija o kvalitetu – JUSK ICQ 2013, Beograd, Srbija.
9. Đuran, J. (2011): *Entrepreneurship as a factor of sustainable development of agro-economics in the Republic of Serbia*, Agroekonomica, vol. 51-52, pp. 165-173, Faculty of Agriculture, Novi Sad, Serbia.
10. Ekonomist EMG (12th April 2012): *Posustajanje industrije Srbije*, br. 619-620, str. 12-13, Beograd, Srbija.
11. Hult, G. T. M. (2012): *A focus on international competitiveness*, Journal of the Academy of Marketing Science, vol. 40, no. 2, pp. 195-201, Springer.
12. Ilić, M. (2006): *Poslovni inkubatori i klasteri kao model razvoja malih i srednjih preduzeća u industriji*, Industrija, vol. 34, no. 4, pp. 63-98, Ekonomski institut, Beograd, Srbija.
13. ISO: *The ISO Survey 2006-2012,* (available at: http://www.iso.org/iso/iso-survey accessed at: 13.03.2014)
14. Kotler, P. (2003): *Marketing od A do Z,* Adižes, Novi Sad, Srbija.
15. Mele, C., Pels, J., Storbacka, K. (2014): *A holistic market conceptualization*, Journal of the Academy of Marketing Science, pp. 1-15, Springer.
16. Milićević, M. (2013): *(Ne)konkuretnost konditorske industrije Srbije,* III poljoprivredni forum - Hrana za Evropu, Subotica, Ekonomski institut, Beograd, Srbija, available at: http://www.ecinst.org.rs/sites/default/files/prezentacije/prezentacija_miroslav_miletic.pdf

17. Milojković, D., Stojković, N. (2012): *Training for cluster facilitators in function of cluster development in Serbia*, in New Challenges in Changing Labour Markets, ch. no. 19, pp. 327-336, Institute of Economic Sciences, Belgrade, Serbia.
18. Pejanović, R., Cvijanović, D., Njegovan, Z., Tica, N., Živković, D. (2009): *Problemi poljoprivrede Republike Srbije i mere za prevazilaženje krize*, Ekonomika poljoprivrede, vol. 56, no. 2, pp. 221-230, IEP, Beograd, Srbija.
19. Pejanović, R., Glavaš Trbić, D., Tomaš Simin, M. (2013): *About the causes of agriculture crisis it the Republic of Serbia,* Economics of Agriculture, vol. 60, no. 2, pp. 253-264, IAE, Belgrade, Serbia.
20. Republički zavod za statistiku (2013): *Mesečni statistički bilten, 11/2013*, Beograd, Srbija, available at: http://webrzs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=69 accessed at: 13.03.2014.
21. Serbian Chamber of Commerce (2014a): *Poljoprivreda, prehrambena i duvanska industrija – Statistika*, available at: www.pks.rs accessed at: 13.03.2014.
22. Serbian Chamber of Commerce (2014b): *Sertifikati*, available at: http://www.pks.rs/Aplikacije.aspx?aplikacija=sertifikati accessed at: 13.03.2014.
23. SIEPA (2014a): *HACCP Standard*, available at: http://siepa.gov.rs/sr/index/standardi/haccp.html accessed at: 13.03.2014.
24. SIEPA (2014b): *Najveći izvoznici u 2013. godini*, (available at: http://siepa.gov.rs/index/vesti/siepa-vesti/; accessed at 13.03.2014)
25. World Economic Forum: *The Global Competitiveness Report 2008-2013,* available at: http://www.weforum.org/reports accessed at: 13.03.2014.
26. Zdravković, B. (2011): *International Business Prospects of Small and Medium Enterprises in Serbia*, International Journal of Economics & Law, no. 1, pp. 159-168, Central and Eastern European Online Library.

ANALIZA ASPEKATA KONKURENTNOSTI PREHRAMBENE INDUSTRIJE U REPUBLICI SRBIJI

Cariša Bešić[5], Dragan Ćoćkalo[6], Dejan Đorđević[7], Srđan Bogetić[8]

Apstrakt

Konkurentska sposobnost preduzeća se u savremenim uslovima poslovanja teško postiže, a lako gubi. Razlog za ovakav stav leži u činjenici da je brzi tehnološki napredak omogućio da tehnologija postane dostupna svima u svetu pod prihvatljivim uslovima. Konkurentnosti domaćih preduzeća je na vrlo niskom nivou. Nedovoljna primena znanja, nizak tehnološki nivou preduzeća, neproduktivnost i neefikasnost samo su deo problema. Prehrambena industrija u Srbiji deli sudbinu domaće privrede – nekonkuretnost je jedan od glavnih faktora koji utiče na krizu u sektoru poljoprivrede. Autori se u ovom radu, na bazi dostupnih domaćih i međunarodnih statističkih pokazatelja, bave analizom i prikazom konkurentskih mogućnosti domaće privrede u opšte, a posebno sektora prehrambene industrije. Autori takođe ukazuju na mogućnosti za unapeđenje konkurentnosti.

Ključne reči: *konkurentnost, prehrambena industrija, kvalitet, upravljanje.*

5 Prof. dr Cariša Bešić, vanredni profesor, Univerzitet u Kragujevcu, Fakultet tehničkih nauka, 32000 Čačak, Svetog Save 65, Srbija, Telefon: +381 60 369 96 96, E-mail: carisa.besic@sbb.rs

6 Prof. dr Dragan Ćoćkalo, vanredni profesor, Univerzitet u Novom Sadu, Tehnički fakultet "Mihajlo Pupin", 23000 Zrenjanin, Đure Đakovića bb, Srbija, Telefon: +381 62 801 97 41, E-mail: cole@tfzr.uns.ac.rs

7 Prof. dr Dejan Đorđević, redovni profesor, Univerzitet u Novom Sadu, Tehnički fakultet "Mihajlo Pupin", 23000 Zrenjanin, Đure Đakovića bb, Srbija, Telefon: +381 62 801 97 26, E-mail: djole@rocketmail.com

8 Dr Srđan Bogetić, profesor, Beogradska poslovna škola, 11000 Beograd, Kraljice Marije 73, Srbija, Telefon: +381 64 125 42 92, E-mail: sbogetic@yahoo.com

Review Article

Economics of Agriculture 3/2014
UDC: 352.07:338.435

ACTIVATION OF LOCAL COMMUNITIES FOR DEVELOPMENT OF RURAL AREAS

Julia Doitchinova[1], Zornitsa Stoyanova[2]

Summary

The article examines the main problems encountered during the development of area-based partnerships in rural Bulgaria. These partnerships were created to enhance endogenous development in rural areas and have been rapidly adopted due to the requirement to run the European Union LEADER type program.

Purpose of the article is to assess the practice and the problems of implementation of the LEADER approach in Bulgaria for the first membership program period and to offer recommendations to increase the motivation of local communities for the development and implementation of local development strategies.

Conclusions and recommendations for improving the practice of implementation of the Leader approach is based on the results of the survey and analysis of the documents of local action groups and the Program for Rural Development, realized within a research project by a team from the University of National and World Economy Sofia.

Key words: *LEADER, local action group (LAG), rural development, rural development program.*

JEL: *Q16, R58.*

Introduction

The Rural Development Program (RDP) funded by the EU support a wide range of activities. Thereby an integrated approach to rural development seems to contribute more to this highly complex task than sectorial approaches. Thus rural development must deal with multifunctionality (Gallent et al., 2008) as a comprehensive territorial development approach that is based on the strengths, weaknesses, opportunities for, and threats to, a region (Terluin, 2003). The LEADER approach is one part of this, and employs a bottom-up, participatory approach in which stakeholders from different

1 Julia Doitchinova, D.Sc. (Econ.), Full Professor, University of National and World Economy, Student city, 1700 Sofia, Bulgaria, Phone: +359 281 953 84, E-mail: juliadoj@abv.bg

2 Zornitsa Stoyanova, Ph.D., Associated Professor, University of National and World Economy, Student city, 1700 Sofia, Bulgaria, Phone: +359 281 954 60, E-mail: zori_stojanowa@yahoo.de

institutions together form a Local Action Group (LAG) as a kind of a public-private partnership that makes decisions about the financial support for projects.

Unlike previous approaches to regional development, the approach "bottom up" is consensus-oriented, multi-decision levels-based, with dynamic interactivity among a plurality of actors, including civil-society actors such as private partners or environmental organized interests (NGOs), inter-sectoral links and less defined tasks (Kjaer, 2004). Through this it is possible to decentralize significant part of the decisions and according to the specific conditions in each EU Member State and in each region, to reflect the characteristics of the economic development of the territories, culture of the rural population and others (Dargan, Shucksmith, 2008).

The LEADER method is based on the principles of subsidiary and partnership. These two principles underlie the creation of a decision-making entity, a Local Action Group (LAG), appearing as the project manager for the projects carried out by three categories of local stakeholders - self-governments, entrepreneurs, associations (Maurel 2008; Chevalier, Maurel, 2010). LAG as the type of partnership is a system of formalized cooperation, grounded in legally binding arrangements or in formal undertaking of co-operative working relationships and mutually adopted plans among a number of institutions (OECD 1990). Such a definition is convenient due to different legal systems in various countries determining formal legal structures of partnerships and a great variety of functions and targets.

The area-based partnership can define as a voluntary and open coalition of leaders from different public sectors (territorial self-government, NGOs, companies, state institutions, schools etc.), which together prepare and realize practical, long-term activities aimed at local development and the solving of economic, social and ecological problems in a particular territory (Biderman et al., 2004; Doitchinova et al., 2013). Involving local people is one of the pillars of LEADER LAGs and plays a key role to stimulate the development of the territory, not just to administer (Stoyanova, 2011).

Furmankiewicz (2008) has pointed out that the significant feature of new-created partnerships is the occurrences of strong (durable) connections, consensus and long-term decision-making and transparency. The unsuitability of the institutional structures and of the cognitive matrices in relation to the presuppositions of the bottom-up approach may have an inhibiting effect on the reception of the LEADER model. The lack of social capital and more specifically the lack of entrepreneurs, the weak social links, the under-education of the rural population, and the demographic aging process, all serve to put a brake on the involvement of local actors. It is hard for local communities to adjust and to make good use of their skills (Chevalier, Maurel, 2010). These elements help explain the context of the reception of the LEADER model.

The transition in the implementation of the LEADER approach in early 2007 - from Commission to national level posed a number of problems for its implementation mainly in the new EU members. A number of researchers (Gorton et al., 2009) consider the lack of convergence in the socio-economic conditions of rural areas

in New Member States and established Member States to be an implementation. The explanation, why the CAP does not fit Central and Eastern Europe. For these reasons, any analysis and evaluation of the implementation of LEADER approach and proposals for adapting it to the particularities of rural regions to the respective country can contribute to its successful.

Purpose of the article is to assess the practice and the problems of implementation of the LEADER approach in Bulgaria for the first membership program period and to offer recommendations to increase the motivation of local communities for the development and implementation of local development strategies (LDSs).

Methodological framework

Findings and conclusions in the paper are based on the results of university research project and an analysis of the publications of the current estimates of the Rural development program (RDP) in Bulgaria. In accordance with EU recommendations, the analysis focuses on the results of impact and procedures for implementation of the RDP, as well as comparisons with other new countries for the last 10 years.

Within the research project in LAG is conducted a survey and in-depth structured interviews with managers and LAG members , mayors and municipal officials as well as civil servants on various levels of government. The questions are pointed to the problems in the implementation of the LEADER approach in Bulgaria. Questions contained in the survey are closed type, as well as for personal evaluation. Open questions were used to obtain additional information about the variety of actors, projects and problems.

In selecting the objects of interest were used the following criteria:

- Areas with high activity of the municipalities and civic structures under Axis Leader. These are areas in which the majority of rural LAG are formed during the period until 2009;
- Disadvantaged and other rural areas with natural climatic, terrain and other constraints;
- Municipalities with fewer people, united in a common local action group;
- Municipalities involved in the preparation of projects for "Leader" implementation;
- Areas with high potential for development due to their spatial location and opportunities for cross-border cooperation.

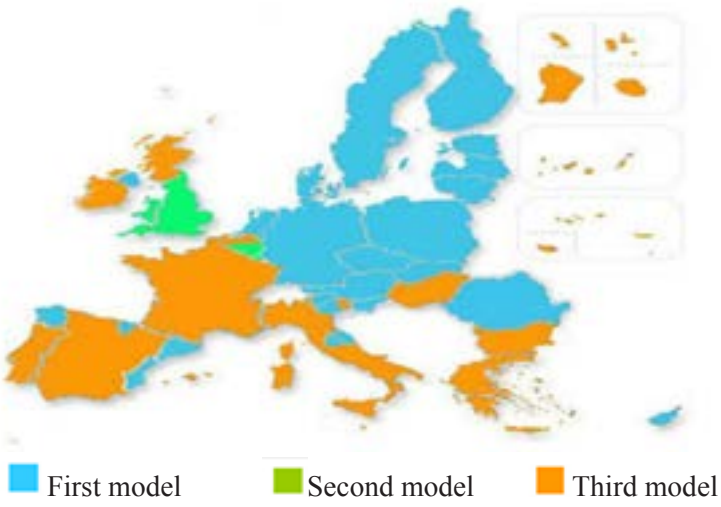
The choice of objects of study is conducted by using at least two criteria. The majority of the municipalities are eligible for three, even four criteria.

It is studied the approved local development strategies of 66% of LAGs in Bulgaria and assessed priorities and objectives of funding and problems in their implementation.

Bulgarian version of the LEADER in comparison with other new EU members

The second by distribution in the EU „LEADER model" is applied in Bulgaria (Figure 1). Its application is characterized by decentralization in the approval of projects. LAG is responsible for evaluation, selection and approval and the issuance and delivery of the notification of beneficiaries. Payments to beneficiaries are made by the Paying Agency. This model is applied in Portugal, Malta, Belgium (Flanders) and parts of Italy.[3]

Figure 1. European LEADER models



Source: Focus Group 1- Summary of the Extended Report: the Implementation of Leader Approach for publication, December, 2010.

Regardless of the common EU regulation for a minimum percentage of funds under Axis 4 LEADER, the new member states have adopted divergent decisions in their national programs for rural development in 2007. Data show that 33 % received values close to the accepted 2.5% (Table 1).

Table 1. Distribution of EU-12 by share of funds under Axis 4 LEADER of the total amount of funds in national rural development programs

Indicator	No. of countries	Structure	Countries
up to 3	4	32.2	Bulgaria, Slovenia, Slovakia, Latvia
3,1 - 4	2	16.7	Cyprus, Malta
4.1-5	2	16.7	Romania, Poland
5.1-6	2	16.7	Czech Republic, Hungary
over 6	2	16.7	Estonia, Lithuania

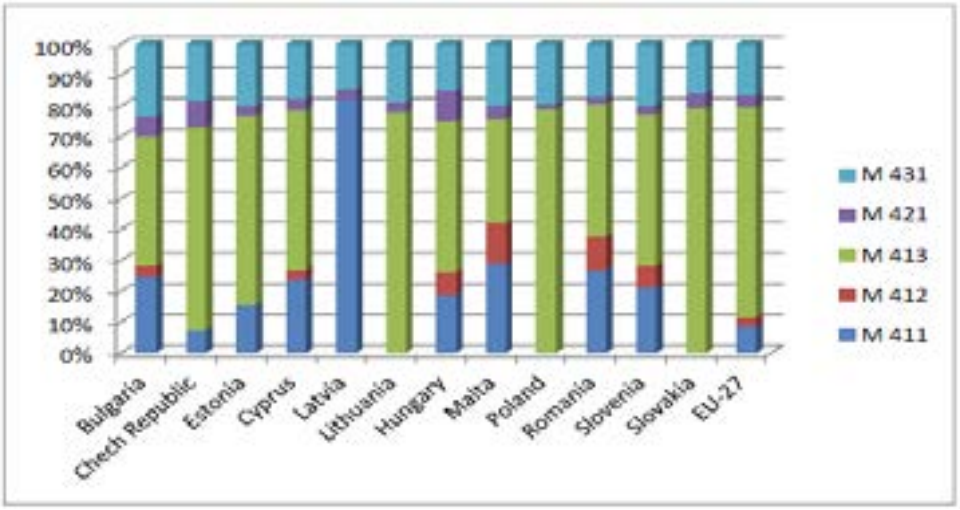
Source: EC, Rural Development in the European Union. Statistical and Economic Information, Report, 2013.

3 Abruzzo, Basilicata, Calabria, Emilia Romagna, Puglia, Sardinia, Sicily, Tuscany, Trento, Campania and others.

The lowest share of funds under Axis 4 is in Bulgaria (only 2.3 %). At the same time for activation of local communities and revitalize rural areas countries like Estonia and Lithuania are given respectively 9. 5 and 6. 1 %. These values are higher than these in the most countries in the EU-15. At EU-27 level, Axis 4 represents 6.3% of the EAFRD contribution. Denmark and Spain are the Member States which attribute most importance to this bottom-up approach (11% each).

Analysis of the structure of the measures and funds in LDSs reveal different approaches and strategic decisions of the member states. As a whole it is observed that the priorities are pointed to improving the quality of life in rural areas and diversification of employment (M 413 - Figure 2). The funds for this purpose are in the range of 33.5% (Malta) to 79.2% (Slovenia). The only exception is Latvia. There are not such funds in its rural development program for Axis LEADER.

Figure 2. Distribution of funds under Axis 4[4] of the rural development programs in the new Member States for the period 2007-2013



Source: EC, Rural Development in the European Union. Statistical and Economic Information, Report, 2013.

At the same time half of the EU-12 has limited the number of the measures. They have directed the majority of the funds to one of the measures. This is most visible in the distribution of funds under Axis 4 in rural development programs of Latvia, Lithuania, Poland and Slovakia. These countries have treated more than 75 % of the budget for Axis Leader for increasing the competitiveness (Latvia 82.8% - M411) and improving the quality of life (Slovakia 79.2% , Poland 78.8 % , Lithuania 78%). At the same

4 M 411 – Implementing local development strategies. Competitiveness;
M 412 – Implementing local development strategies. Environment/land management;
M 413 – Implementing local development strategies. Quality of life/diversification;
M 421 – Implementing cooperation projects;
M 431 – Running the local action group, acquiring skills and animation the territory.

time these countries such as Estonia have not provided the funds for the realization of environmental objectives and management of the area (M- 412).

In comparison with these countries, it can be concluded that Bulgaria had underestimated the importance of the LEADER approach for rural development and motivation for activation of local communities. Thus it is has limited the process of management decentralization of public funds. At the same time the use of all measures for the implementation of local development strategies is complicated and created difficulties in preparation for the introduction, management and the expected effects of the implementation of the Leader approach.

Evaluation of the LEADER approach implementation

In the pre accession period (2003-2007) in Bulgaria were made several projects for development of administrative capacity and skills of civil society for the implementation of the LEADER approach. They are funded by the EU and other international organizations and are aimed primarily at small communities and to the backward rural areas with unfavourable conditions.

The actual application of the approach started in 2007 with the preparation of the legal basis for the implementation of various measures. Regardless of the experience gained from the pilot projects and training administration at national level, the first call for preparatory measure 431-2 Running costs, acquisition of skills and animation – potential LAGs was launched only in 2008, and the first contracts for approved projects were signed in July, 2009.

After the end of acceptance of the projects for this measure in 2010 were created 103 LAGs in 25 districts, covering the territory of 158 rural municipalities or 68.3% of the municipalities designated as rural, 71 % of the rural population and 2,265 million persons or 70.8 % of the rural population .The expectations contained in the Plan for Rural Development are significantly surpassed: " to prepare at least 60 potential local active groups". It shows that in the future LAG could have decisive importance for the development of rural areas and their inhabitants. Furthermore, more than 30 projects haven't been approved, while 10 % of the approved for funding projects have not entered into contracts or their contracts were terminated.

Under Measure 41 "Implementation of local development strategies" and sub-measure 431-1 "Running costs, acquisition of skills and animation – selected LAGs" are applied 126 proposals for LDSs. The strategies of 35 LAGs were approved (only 27.8 %).These LAGs cover 57 municipalities (24.7% of the rural municipalities), have a population of 800 758 people (less than 25% of the population in rural areas) and 27.8% of the rural areas.

Table 2 presents main characteristics of local action groups – average, minimal and maximal values. The number of villages is between 4 and 87 and shows differences in conditions in rural areas. Data show that most villages are in the territories of the local action groups in mountainous and hilly areas of the country.

Population and territory varies more 6 times. The average population of the territory of a local action group indicates that the majority of areas are with relatively few inhabitants. Even local action group with the largest population reaches only 78% of the maximum level.

Most of LAGs are located in the territory of one municipality (52 %) and 17 % of LAG – in the territory of three municipalities. Around one third of all LAGs are on the territory of two municipalities.

Table 2. Main characteristics of local action groups

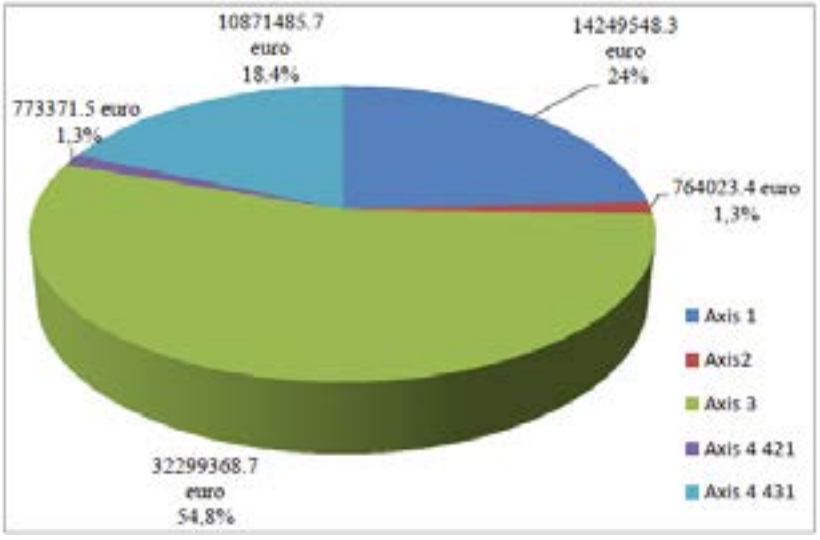
Index	No. of municipalities	No. of villages	Population	Area (km^2)
Average	1.6	31,3	23,575	737,156
Min	1	4 LAG Kneja	12,128 LAG Ardino	263.96 LAG Rakovski
Max	3 + part of forth LAG Nord Stara planina – Kopren-Midjur	87 LAG Breznik-Trun	78,636 LAG Belovo-Septemvri-Velrigrad	1,498.79 LAG Belovo-Septemvri-Velrigrad

Source: Ministry of Agriculture and food, Bulgaria, Sofia.

Note: Municipality Berkoviza is divided between LAG Nord Stara planina – Kopren-Midjur and LAG Berkoviza – Godech.

Figure 3 presents the total public expenditures which was planned in the LDSs of 32 of the 35 approved strategies.

Figure 3.Total public expenditures of LDSs by axis (in EUR)



Source: LDSs of 32 approved strategies.

The planned public expenditure has the highest share of Axis 3 „Quality of life in rural areas and diversification of the rural economy ". The planned funds have an amount of 32,299,368 euro or 54.8% of total public expenditures. Second priority has axis 1 "Improving the competitiveness of the agricultural and forestry sector" and the planned public expenditures represents 24% of the total amount. Axis 2 and Axis 4 have the lowest share, respectively 764,023 and 773,371 euro or 1.3% of total public expenditure. Overall, the share of funds for Axis 2 „Improving the environment and nature" is low, only 16 LAGs have provided measures of this axis in their LDSs.

Table 3 presents the indicative allocations to the measures included in the LDSs of 32 of the 35 LAGs. The total public expenditure planned in the strategies ranges from 43,234.6 to 920,6549.8 euro for the various measures included in the strategies. In the structure of total public contribution for the period of the strategy , the highest share of funding is provided by measure 312 "Support for the creation and development of micro-enterprises" and measure 121"Modernisation of agricultural holdings", respectively, 15.6% and 14.9% and the lowest share is for measure 122 "Improving the economic value of the forests", only 0.1 %.

Table 3. Indicative allocation by measures for the period of LDSs

Measure of LDSs	Total public expenditures, in EUR	Structure, %
111 Training, information and diffusion of knowledge	296,286.9	0.5
121 Modernisation of agricultural holdings	8,793,613.5	14.9
122 Improving the economic value of the forests	43,234.6	0.1
123 Adding value to agricultural and forestry products	5,116,413.2	8.7
223 First afforestation of non-agricultural land	400,813.2	0.7
226 Restoring forestry potential and introducing prevention actions	363,210.2	0.6
311 Diversification into non-agricultural activities	4,421,704.7	7.5
312 Support for the creation and development of micro-enterprises	9,206,549.8	15.6
313 Encouragement of tourism activities	3,057,326.7	5.2
321 Basic services for the economy and rural population	7,232,685.2	12.3
322 Village renewal and development	6,629,139.3	11.2
323 Conservation and upgrading of the rural heritage	1,447,188.3	2.5
331 Training and information of economic actors	304,774.6	0.5
421 Inter-territorial and trans-national cooperation	773,371.5	1.3
431-1 Running costs, acquisition of skills and animation – selected LAGs	6,447,929.4	10.9
431-2 Running costs, acquisition of skills and animation – potential LAGs	4,423,556.3	7.5
Total	5,8957,797.7	100.0

Source: LDSs of 32 approved strategies.

Data shows the structure of the number of projects to be funded by LDSs and the number of beneficiaries who intend to be supported. The lowest number of planned projects and beneficiaries is planned in the strategies of LAG Razlog - 25 numbers of projects and beneficiaries, and the higher in the LAG Isperih - 100 projects and 150 beneficiaries. In 57 %

of the surveyed LAGs the number of projects and beneficiaries is between 25 and 45.

The planned number of projects in the strategies of 23 approved LAG is 877 and the number of beneficiaries is 856. Similarly of the structure of the distribution of funds under the indicative budget by measures the structure of the number of projects and the number of beneficiaries of the measures (Table 4) the highest share is the number of projects and beneficiaries in measures 121 "Modernization of agricultural holdings", respectively 18.1 and 21.1% and measure 312 "Support for the creation and development of micro-enterprises", respectively 18.7 and 19.2%. The lowest priority measure is 122 "Improving the economic value of the forests" covering 0.2% of the projects and beneficiaries - 1 % of the projects and 1.5 % of the support beneficiaries.

Table 4. Structure of planned in the LDSs projects and beneficiaries

Measure	Structure of projects	Structure of beneficiaries
111 Training, information and diffusion of knowledge	4.3	3.4
121 Modernization of agricultural holdings	18.1	21.1
122 Improving the economic value of the forests	0.2	0.2
123 Adding value to agricultural and forestry products	10.4	10.3
122 Improving the economic value of the forests	1.0	1.5
226 Restoring forestry potential and introducing prevention actions	1.6	1.6
311 Diversification into non-agricultural activities	11.2	14.0
312 Support for the creation and development of micro-enterprises	18.7	19.2
313 Encouragement of tourism activities	5.1	4.8
321 Basic services for the economy and rural population	11.7	8.8
322 Village renewal and development	9.2	7.0
323 Conservation and upgrading of the rural heritage	6.2	6.1
331 Training and information of economic actors	2.2	2.0
Total	100.0	100.0

Source: LDSs

Differences in the budget set in the LDSs of the surveyed LAGs by measures showed that the amounts vary from 2 to 13 times for different measures and the highest planned budget is in the strategy of LAG High Western Rhodopes and LAG Radomir- Kovachevtsi, which is 2,000,000 euro and it is about 2 times higher than this planned in LDS of LAG Galabovo. The biggest difference in the planned funds is observed for measure 123 "Adding value to agricultural and forestry products" (the amount varies 13 times) and measure 321 - Basic services for the economy and rural population", with a minimum of 11 times less than planned maximum funds in the LDS of LAG Knezha. Less difference between minimum and maximum of planned budged are observed for measure 41.

Data to 01.11.2013 for the implementation of measure 41 show that only 27.7% of the applications were approved. Approved expenditures are only 25% of the expenditures of the applications. This shows that the desire to apply the measure exceeds the funds in it, which could be granted (Table 5). According to estimates of experts at the National rural network resources available to finance applications under Axis 4 LEADER is three times

less than shown interest for applications. Approved projects by 35 LAGs for verification of State Fund Agriculture (SFA) are 628, and 238 were approved, i.e. about 63% of applications are not approved. The concluded contracts are 144 worth 446,001,463.8 euro, which is only 16.58% of the approved projects by the LAG and 8.38% of the total budget in measure 41, which shows that there are differences in the criteria for project approval by the LAG on one hand and SFA on the other. Simultaneously, the late start of the implementation of LDSs created prerequisites LAGs to approve projects that have relatively limited impact on the area and contribute to achieving the objectives of the strategy, which is the reason for the low percentage of projects approved by the State Fund Agriculture.

Table 5. Received and approved applications, contracts under Measure 41 and 431-1

Measure	Applied Applications		Approved Applications and Contracts		Payments (June, 2014)	
	No.	Total expenditure, mln. EUR	No.	Total expenditure, mln. EUR	Total expenditure, mln. EUR	Percent of contracts
41 Implementation of the local development strategies	126	209	35	53	5.8	10.9
431-1 Running costs, acquisition of skills and animation – selected LAGs	126	23,7	35	12,4	5.3	43.3

Source: Information for progress of Rural Development Program (June, 2014)

Despite the great interest and contracts for 98% of funds under Measure 41 "Implementation of local development strategies" are reached between 63.6 and 71.6% than targeted in the Rural Development Program (Table 6).

Table 6. Degree of achievement of the reference indicators in RDP M-41 "Implementation of local development strategies"

Indicator	Kind	Measure	Target	Result	Degree of achievement (%)
Number of supported LAGs	General	Number	50	35	70
Total area of the LAG	General	sq.km.	36,000	25,800	71.6
Number of projects financed by LAGs	General	Number	2,500	1,007 May 2014	-
Population in the territory covered by the LAG	General	Number	1,260,000	801,000	63.6

Source: Ministry of Agriculture and food, National Rural Network, 2013.

These data indicate weaknesses in the allocation of funds in the RDP and limit the population involved in the realization of LDSs.

Discouraging impact on the activity of local communities has insufficient publicity of assessment procedures and approval of projects under Axis 4. From the conducted four procedures for acceptance of projects, on the website of the RDP, only the first call on the measure 431-2 has been published register of the accepted proposals. There are procedures, on which have not been published lists neither on applicants neither on the confirmed projects. There is a lack of information and for the classification of projects through evaluation criteria.

At the same time the realization of the projects are accompanied with a number of problems that according to a survey are:

- The long period of time from the submission of projects to their approval, reaching 9 months in sub measure 431-2 and 15 months in measure 41. According to the respondents this leads to a decrease in interest and decrease the activity of local communities;
- A significant proportion of respondents (47%) share common difficulties in organizing meetings to inform residents, 53% of them share the opinion that they had some difficulties in determining the local leaders, but they did not affect the quality of their activities (Table 7). Respondents share common problems associated with disease of speakers who have caused a reordering of the planned activities or deposition over time. In this respect, they shared their negative opinion on the complicated procedure to change the period to implement the various activities involved in the project and the need for information for each activity.

Table 7. Estimates of the representatives of LAG for creation of administrative capacity and problems in creating and implementing of LDSs (in %)

Indicators and assessments	No difficulties	Customary petty difficulties	Some difficulties	Significant difficulties	Total
Organization of meeting for local citizens information	15	47	15	23	100
Defining of local leaders	8	23	53	23	100
Training of local leaders	31	31	31	7	100
Visits to LAG located in other member states	23	61	16	-	100
Creation of a local development strategy		8	69	23	100
Discussion and adoption of strategy of local citizens			39	61	100

Source: Doitchinova et al., 2012.

In comparative perspective between these activities - the greatest difficulty was in determining the local leaders and organization of meetings to inform local residents, and two of the groups had significant difficulties, respectively, 23% of respondents. These

are communities with a large number of small settlements, where were carrying out joint activities for residents of several villages.

Interesting is the comparison between the respondents' answers to the problems in creating strategies and their acceptance by local communities. Considerably more significant are the difficulties in promoting strategies. Therefore the strategies of 11% of LAGs were revised with a purpose to reflect more fully the conditions of rural areas.

- Not well developed and constantly changing regulatory framework on the implementation of LEADER in terms of project realization (as 100% of respondents). This creates uncertainty and discourages potential beneficiaries. Only in the 5 months (September 2013 - January 2014) The Minister of Agriculture and Food has issued three orders to change the rules to implement measures 41 "Implementation of local development strategies" and 431-1 "Management of Local Action Groups, acquiring skills and achievement of social activity of the territory of the local action groups";
- Long delays in the processing of applications for reimbursement, which complicates the process of successful implementation of the sub-measure 431-2. The period of reimbursement for 64% of respondents LAGs is between 6 and 9 months, and in 14% - even more than 1 year;
- Insufficient administrative capacity of local level for project management in support of local development activities such as the LEADER approach (according to 71% of respondents this creates considerable difficulties).

On the issue of assessing the administrative capacity of municipal administration and LAG participants, 52% of respondents indicate that despite the training of employees in municipal administrations there are only separate competent municipal employees who are responsible for the problems of developing and managing of the projects. At the same time, insufficient administrative capacity is met only in 5% of cases. In three municipalities (14%) - the assessment is that employees are sufficiently qualified for developing and managing various projects and in 29% of them that they need additional training to deal with the work of the LAG.

- Although legally planned limits the influence of public authorities in the management of the LAG is dominant. The reasons are that municipalities have initiated the establishment of LAGs in 71% of cases, and the scheme of financing projects in measure 431-2 put LAGs financially dependent on the most part of the project.
- Relatively low quality and sustainability of established partnerships at the local level, especially in LAGs covering the territory of two or more municipalities. The survey found out problems in 36% of the total number of LAGs and 63% located in the territory of two or more municipalities;
- Low quality on some procedures for implementing LDS adopted by the LAG, aggravated a process of implementation of LDS or need to be amended;
- Staff turnover, causing a partial or even a complete change of the teams working on the implementation of the sub-measure 431-2 and 41.

Presence of difficulties in the motivation of local community involvement in the initiatives of local partnerships - 48% of respondents believe that in organized forums participate only interested citizens and representatives of the local administration, and 19% that are actively participate in the entire territory;

Suggestions for improving the administration of the LEADER approach and increase the activity of the local communities

The creation of a favourable and stable environment for the LAG is crucial to building local capacity, skills creation and functioning of local action groups, LDSs and their implementation.

To increase the role of the LEADER approach and to improve the regulatory environment for the LAG is necessary to create some prerequisites:

- To increase the importance of the LEADER approach in the new rural development program. Its share has to be closer to that of the Czech Republic, Hungary and even Estonia.
- To improve the transparency of procedures for implementing Axis LEADER as a requirement to increase the motivation and activity of local communities.
- to improve coordination between the Ministry of Agriculture and Food, State Fund "Agriculture" and the beneficiaries of the measures of Axis 4 from the RDP.
- Improving coordination and conflict resolution between participants in the projects regarding some of the LEADER initiatives through surveillance and supervision regarding the process of decision-making and operational implementation.
- Implementation of changes in certain procedures related to the implementation of measures and financing of projects.
- Shortening the deadlines for payment of financial assistance under the measure. They currently range between 100 and 129 days (4.5 - 6 months).
- Improvement of local self-government, which is an important factor in mobilizing local communities and rural areas development and for the increase of public participation at local level.

Although during the last decade were implemented a number of initiatives in this direction, public participation at local level is still relatively underdeveloped. A long-term support for the establishment of structures for cooperation in rural development and mobilization of local communities is needed. In this regard, municipalities could be actively involved in initiatives of organizations like the National Association Legal Initiative for Local Government. This would help municipalities to increase their efficiency at work, to improve local services and to lobby more effectively for their interests at national level. Simultaneously, they will gain more experience in terms of improving the capacity of local level to solve various problems of communities.

- Increasing the capacity of local authorities and participants in LAG in order to achieve better implementation of the project cycle and increase

the knowledge and skills for developing and managing various projects.

- To improve the opportunities for transnational cooperation of LAG on LEADER initiative as well as their participation in a wide range of initiatives linked with an increase of the capacity of groups to exchange information and to share best practices between territories and LAG from different regions is necessary:
- The activity for realization of a "Leader" and for support of LAG to be stimulated and supported by many organizations.

National Network for Rural Development could be useful for LAG by one of the activities set in its Action Plan, namely the initiation of annual or if necessary - with greater frequency - national meetings in which participation can take all citizens, businesses, organizations and institutions related to rural development.

LAG could be supported by the National Rural Network also regarding their awareness as one of the activities of the National Rural Network in Bulgaria is associated with identifying, analysing and providing information on best practices applicable in Bulgaria (on various topics contained in the Community strategic guidelines for Rural Development and the Program for Rural Development - innovation, renewable energy, rural employment). Through it, the LAG can carry out exchanges of experience and knowledge of administrative rules, procedures and enforcement mechanisms within the program for rural areas and to provide expert assistance to conduct training seminars.

Bulgaria as an EU member to be engaged in more initiatives for implementation Discouraging impact on the activity of local communities has insufficient publicity of assessment procedures and approval of projects under Axis 4. From the conducted four procedures for acceptance of projects, on the website of the RDP, only the first call on the measure 431-2 has been published register of the accepted proposals. There are procedures, on which have not been published lists neither on applicants neither on the confirmed projects. There is a lack of information and for the classification of projects through evaluation criteria.

The participation of LAG in our country in initiatives of this kind would contribute to enhancing their capacity for transnational cooperation and inclusion in global networks, promoting the relationship between rural people and rural initiative groups in national and European policies and funds.

Literature

1. Biderman, A., Kazior, B., Serafin, R., Szmigielski, P. (2004): *Building partnership. A practical manual,* Polish Environmental Partnership Foundation, Kraków, Poland.
2. Chevalier, P., Maurel, M. (2010): *Policy Transfer of the Local Development Model. The Leader Program Implementation in Central European countries*, Regional Studies Association, Annual International Conference, May 2010, Pécs, Hungary.
3. Dargan, L. Shucksmith, M. (2008): *LEADER and innovation*, Sociologia Ruralis, vol. 48, pp. 271–294.

4. Doitchinova, J., Miteva, A., Stoyanova, Z. (2012): *The Process of creating local action group in Bulgaria – problems and prospects*, Scientific Annals of the "Alexandru Ioan Cuza" University of Iasi, Economic Sciences Section, Vol. 59, No. 2.
5. Doitchinova, J., Kanchev, I., Miteva, A., Stoyanova, Z., Stanimirova, M., Jecheva, I., Tochkova, E. (2013): *Possibilities of LEADER approach for development of viable rural areas and protection of natural recourses*, publ. Stopanstvo, Sofia.
6. EC (2013): *Rural Development in the European Union*, Statistical and Economic Information, Report 2013.
7. Furmankiewicz, M. (2008): *Enhancing endogenous development in rural areas: the implementation of the LEADER pilot programme in Poland*, Wrocław University of Environmental and Life Sciences, Poland.
8. Gallent, N., Juntti, M., Kidd, S., Shaw, D. (2008): *Introduction to Rural Planning,* Natural and Built Environment Series, Routledge, London/New York.
9. Gorton, M., Hubbard, C., Hubard, L. (2009): *The folly of European Union Policy Transfer: Why the Common Agricultural Policy (CAP) Does not fit Central and Eastern Europe*, Regional Studies, vol. 43:10, pp. 1305-1317.
10. *Implementation of the Leader approach in Bulgaria. Implementation challenges in Bulgaria in the period 2007-2013 - lessons learned for future programming period*, Thematic Group 3, Management Unit of the National Rural Network, 2013.
11. Kjaer, A. M. (2004): *Governance*, Polity Press, Cambridge.
12. Maurel, C. (2008): *Local Development Stakeholders and the European Model. Learning the LEADER Approach in the New Member States,* Czech Sociological Review, Vol. 44, no. 3.
13. *Program for rural regions development 2007-2013*, Ministry of Agriculture and Food, 2007, Sofia, Bulgaria.
14. *Local Partnerships for Rural Development,* OECD, 1990.
15. Stoyanova, Z. (2011): *Local action groups – problems, possibilities, perspectives*, pub. ATL-50, Sofia.
16. Terluin, I. (2003): *Differences in economic development in rural regions of advanced countries: an overview and critical analysis of theories,* Journal of Rural Studies, vol. 19(3), pp. 327–344.

Review Article

Economics of Agriculture 3/2014
UDC: 338.439.02:339.564(497.11)

MEASUREMENT OF COMPARATIVE ADVANTAGES OF PROCESSED FOOD SECTOR OF SERBIA IN THE INCREASING THE EXPORT

Svetlana Ignjatijević[1], Miroslav Čavlin[2], Dragomir Đorđević[3]

Summary

The subject of this research is to analyse the comparative advantages of export of processed food sector, in order to define the position of the processed food sector in Serbia in compare to the Danube region and highlight the products that were and will be the main exporting agricultural product of Serbia. In this research, we have applied the following indexes: RXA, RTA, ln RXA, RC, RCA, LFI, GL, Sm. We have examined the movement of the index for the period 2005 - 2011th year. We have investigated the existence of correlations RCA index of processed food sectors with the application of the Pearson and Spearman index determined as RCA variable mutual co-variant. We found that following products showed an increase of comparative advantage in export as measured by the Balassa index: milk products, cheese and curd, groats and meal of other cereals, preparations of cereals, flour, starch, vegetables, roots and tubers, processed, prepared and Fruit products, sugar, molasses and honey, chocolate and other food preparations with cocoa, animal food (including un milled cereals), edible products and preparations, alcoholic beverages, non-alcoholic beverages, solid vegetable fats, oils, ' soft ' and animal and vegetable fats.

Key words: *Serbia, Danube region, comparative advantages, processed food sector*

JEL: *F14, P51*

Introduction

Market of the countries of the Danube region is of particular importance for the development of the food industry in Serbia. As Serbia in the past achieved positive comparative advantage exports of processed food sector (Ignjatijević, Milojević, 2011) we rightly believe that technological and organizational modernization of Serbia can improve the current level of cooperation. Serbia has very favourable natural conditions (soil and climate) for diversified

1 Svetlana Ignjatijević, Ph.D., Assistant Professor, FIMEK, Cvećarska 2, 21000 Novi Sad, Phone: +381 21 400 484, E-mail: ceca@fimek.edu.rs , svetlana.ignjatijevic@gmail.com

2 Miroslav Čavlin, Ph.D., Assistant Professor, FIMEK, Cvećarska 2, 21000 Novi Sad, Phone: +381 21 400 484, E-mail: cmiros@gmail.com

3 Dragomir Đorđević, Ph.D., Full Professor, FIMEK, Cvećarska 2, 21000 Novi Sad, Phone: +381 21 400 484, E-mail: djordjevic@fimek.edu.rs

agricultural production (as crop, as well as livestock production), it has experienced producers, top-experts and scientific workers, worldwide recognized selection of various crop products (Arsić, Čavlin, 2013). Increasing demand for fresh food and processed food sector products of the countries of the Danube region represents the potential that must be used. The current concept of the Danube region development is significantly improved, so that the scene is creating for a strong macro-region in which the country should mobilize all resources in order to "overcome the uneven level of development, to strengthen the economy of the member states, conservation and environmental protection, the development of the transportation and education" (Ignjatijević, Milojevic, 2011). In period after 2005 Serbia achieved surplus in export of agricultural and food products. As the leading trade partners of Serbia are countries of the EU and CEFTA, a logical question arises: why then explore the international trade of food products from the Serbia to Danube countries? The answer lies in the fact that Danube region consists of „highly developed countries, developed transitional countries and countries with transitional problems" (Ignjatijević et al., 2013, p. 252) and exactly these countries are foreign trade partners of Serbia. "The company, however, I do not want to, if he wants to survive and evolve freely, must continually take into account all the complex, numerous, rapid and sudden social (economic and non-economic) interests, objectives, requirements, criteria and restrictions set out their environment, to enable the achievement of company goals and long-term maximization of differences between the values of inputs and outputs" (Malešević, Čavlin, 2009). That is why it is necessary to answer the question what is the position of processed food sector of Serbia in comparison to the above mentioned Danube region countries. For this purpose we have applied seven indexes of comparative values: RXA, RTA, ln RXA, RC, RCA, LFI and Sm. Through correlation analysis, we wanted to answer the question of the existence of correlations obtained indexes, then the variation and distribution of the index. In the further research we have measured the level of comparative advantage and specialization of products that belong to processed food sector so we could determine which production have potential for development, or which product has achieved improvement of competitiveness in the international market.

Literature review

Numerous authors were dealing with the question of competitiveness or, to be more precise, the competitive advantages. In their research they were applying Balassa index to explore the position of food industry. Most research is aimed to analyse the competitiveness of the system of the food industry in the EU process. That is how Bojnec et al. (2005) emphasized the importance of structural changes in the food industry of Slovenia in the process of integration into the European market. Majkovic et al. (2006) came up to similar conclusions and they added that in the period before 2003 Slovenia achieved positive competitive advantage with the export of dairy products, meat and beverages. Vološin (2011); Svatoš, Smutka (2012) pointed out the significance of the changes of production and export structure of Czech Republic after joining the EU. The results of their study indicate a positive comparative advantage in export of milk and dairy products, livestock, cereals and beverages. Research results Belova et al. (2012) are consistent with the above conclusion that the export of the Czech food

industry experienced a significant transformation after joining the EU, and that the only traditionally competitive sectors maintain a positive position. Fertö, Hubbard (2001) were dealing with the competitiveness of the Hungarian food industry in period from 1992 until 1998. In another study, Fertö, Hubbard (2002) emphasizes the role of the state in the process of improving the competitiveness of the livestock. By using the Balassa index Bojnec, Fertö (2007) showed a positive comparative advantage of the food industry in Hungary at EU market. Török, Jambor (2013) showed the positive results of the market adjustment of the Hungarian food industry toward demands of the European market. Buturac (2008) researched the position of the manufacturing industry of Croatia. The results of the research show decline in comparative advantage industries in general to slightly increase the comparative advantage of export from the tobacco industry. Buturac et al. in the study (2010) emphasizes the existence of comparative advantage in export of food industry of Serbia and Croatia, which is consistent with the results of Ignjatijević, Milojević (2011). In a study on the level of competitiveness of the food industry in Slovakia, Qineti et al. (2009) suggested two directions of export. Decline of comparative advantage in export to the demanding European market was compensated by an increase in export toward Ukraine. Numerous authors were dealing with the competitiveness of the Serbian economy. In early studies Gagović (2003) analyses the comparative advantage of export in Serbia and points to the agri-food products with positive comparative advantages. The author points out that in the period up to in 1999 there were achieved improvement of the structure of production and exports, which is certainly a positive effect on the level of export competitiveness. One of the first studies on the existence of a comparative advantage in export of agricultural and food products in Serbia is definitely researched by Ignjatijević et al. (2010) on the positive comparative advantage in exports of herbs and herbal raw materials. Modelled on the research of manufacturing in Croatia Buturac (2008); Ignjatijević (2012) proves that the manufacturing industry in Serbia as a whole have negative comparative advantage, while only the food industry has a convenient position. The focus of future research Ignjatijević et al. (2012) is precisely the position of agricultural products and food industries of Serbia in the international market. Raičević et al. (2012) have identified sectors of the food industry with positive comparative advantages. Ignjatijević, Milojević (2012) showed the importance of food industry in development of rural areas of Serbia. A new study by Ignjatijević et al. (2014) have found that "growing intensity of trade of food products in Danube Region countries. There is a concentration of exports in this sector by the countries and by commodity groups. Analysis of changes in revealed comparative advantage points to increase the competitiveness of processed food sector in the Czech Republic, Hungary, Germany, Serbia and Ukraine, while in other countries there is was decrease competitiveness. From this perspective, there is a clear need to continue structural reforms, in order to promote export structure, which is pointed out in earlier studies. In the following period it's not enough just to continue production, on the contrary, countries that are not members of the EU must be strengthened and improve production, as they face the increasingly competitive producers in the EU."

Methods

The paper deals with the analysis of the competitiveness of the processed food sector in the Serbian part of the Danube region, in order to measure the comparative advantage of the exporting sector as a whole and products that make it, examine the existence of correlations RCA index and point to produce a stable position in the international market. The basic concept of comparative advantage was erected in 1965 and the original Balassa model is (Balassa, 1965):

$$B = (\frac{X_{ij}}{X_{it}}) / (\frac{X_{nj}}{X_{nt}}),$$

Where X_{ij} export processed food sector of Serbia, X_{it} total export of Serbia, X_{nj} total export processed food sector of the entire Danube region and X_{nt} total export of the countries in Danube region as a whole. For values B > 0, we believe that the comparative values are revealed. Vollrath (1991) made the correction of the index of comparative advantage and he presents it as relative commercial advantage (RTA). RTA stands for the difference between the relative advantages of export (RXA) and the relative merits of import (RMA).

$$RTA = RXA - RMA$$

$$RXA = B,$$

$$RMA = (\frac{M_{ij}}{M_{it}}) / (\frac{M_{nj}}{M_{nt}}),$$

Where M_{ij} export of processed food is sector of Serbia, M_{it} is total export of Serbia, M_{nj} is total export of processed food sector of the entire Danube region and M_{nt} is total export of the countries of Danube region as a whole. In order to calculate more accurate comparative advantages Vollrath has created another index as the logarithm of the relative advantages of exports and imports (ln RXA and ln RMA). The difference obtained relative advantages of exports and imports are the revealed competitiveness (RC) and are expressed as:

$$RC = \ln RXA - \ln RMA$$

Stating Buturac (2008, 2009) we have applied even logarithmic form of comparative advantage in export. Form to calculate the explicit comparative advantage:

$$RCA = \ln\left[\frac{X_i}{M_i}\right] \times \left(\frac{\sum_{i=1}^{n} X_i}{\sum_{i=1}^{n} M_i}\right) \times 100$$

Where X is the value of export, M is value of import. Index i presents processed food sector in whole or the product of that sector.

Following the example of used indexes of comparative advantage, we created a modified index of comparative advantage (*Sm*), which is calculated by dividing the export of accounts in relation to the total exports of processed food sector in Serbia. The values obtained in the modified model Sm (Ignjatijević, 2011; Raičević et al., 2012) represent a specific model of comparative advantage in export of processed food sector. The modified comparative advantage of processed food sector by *Sm* model is calculated using the formula:

$$Sm = \ln\left[\frac{X_{ip}}{M_{ip}}\right] \times \left(\frac{\sum_{i=1}^{n} X_{ip}}{\sum_{i=1}^{n} M_{ip}}\right) \times 100$$

, where:

Sm - The modified comparative advantage of processed food sector, X_{ip} export of product i processed food sector p, M_{ip} - import of product i processed food sector p, $\sum_{i=1}^{n} X_{ip}$ - total export of processed food sector p i $\sum_{i=1}^{n} M_{ip}$ - total import of processed food sector p.

For an analysis of the level of specialization in intra-industry trade we are using the Grubel-Lloyd's Index. Grubel Lloyd index is calculated as follows (1975):

$$GL_i^t = \left(\left(\sum_{i=1}^{n}\left(X_i^t + M_i^t\right) - \sum_{i=1}^{n}\left|X_i^t - M_i^t\right|\right) / \sum_{i=1}^{n}\left(X_i^t + M_i^t\right)\right)$$

GL_i^t value of Grubel Lloyd index for group of products i. X_i^t value of export, and M_i^t is value of import. The index is in the range of 0 to 1. Values close to 0 indicate the inter-character exchange, and value close to 1 the character of intra-industry trade.

Comparative advantage processed food sector were counted by Lafay index (LFI). Comparative advantage processed food sector were counted and by Lafay index (LFI). It is defined as (Affortunato et al., 2010):

$$LFI^{i}_{\ j} = 100\left(\frac{x^{i}_{\ j} - m^{i}_{\ j}}{x^{i}_{\ j} + m^{i}_{\ j}} - \frac{\sum_{j=1}^{N}\left(x^{i}_{\ j} - m^{i}_{\ j}\right)}{\sum_{j=1}^{N}\left(x^{i}_{\ j} + m^{i}_{\ j}\right)}\right)\frac{x^{i}_{\ j} + m^{i}_{\ j}}{\sum_{j=1}^{N}\left(x^{i}_{\ j} + m^{i}_{\ j}\right)}$$

Where $x^{i}_{\ j}$ and $m^{i}_{\ j}$ export and import of product *J* in country *i*, to the rest of the world, and n is the number of items. The comparative advantage in the country *i* in production *j* measures the differences in products *J* from the total commercial balance. Unlike Balassa index, this index takes into account the difference between exports and imports and tries to overcome some shortcomings of the Balassa index taking into account within the trade flows and GDP.

Research of correlation by Pearson and Spearman coefficient explains the connection of coefficients in shedding light on the comparative advantages. According to the research Lord et al. (2010) we have applied Pearson (r_p) and Spearman (r_s) test. We have found correlation between the level of the paired index 10, and we have established that the value of the RCA co-variant. Analysis of variance (ANOVA) is an analytical model used to analyze the differences when there are more than two groups. The advantage of this method is in the fact that the model included into account all the variability, as well as their impact, making it impossible to assess the other way. ANOVA provides a statistical test of whether or not the means of several groups are equal, and therefore generalizes the *t-test* to more than two groups.

The paper used the data of The Statistical Office of the Republic of Serbia and UN Comtrade for the corresponding year. The study included processed food sector (according to the methodology ITC - International Trade Centre) and products that are in their belonging.

Results

In a study of comparative advantage in exports processed food sector, we applied five indexes. The table below shows the RCA indexes for all analyzed, and the coefficient of variation of the said indexes. The research found a positive comparative advantage of all five indices. Positive values of the index processed food sector are directly related to the low coefficient of variation of the index during the analyzed period. The low coefficients of variation RCA indices indicate the stability of the coefficient of comparative advantage. Established positive value of comparative advantage in export processed food sector is in line with the conclusions of Ignjatijević, Milojević (2011). Empirical research results of comparative advantage in exports processed food sector in Serbia in the period 2005 - 2011th are shown in Table 1.

Table 1. RXA, RMA, RTA, RC and RCA data export of processed food sector in Serbia in the period from 2005 to 2011.

Years	Indexes				
	RXA=B	RTA	LNRXA	RC	RCA
	>1	>0		>0	>0
2005	4.13	2.96	1.42	1.26	0.16
2006	3.98	2.80	1.38	1.21	0.21
2007	3.94	2.95	1.37	1.38	0.28
2008	3.54	2.56	1.26	1.29	0.26
2009	3.53	2.49	1.26	1.23	0.28
2010	1.67	1.08	0.51	1.05	0.34
2011	2.92	1.79	1.07	0.95	0.27

Source: The Statistical Office of the Republic of Serbia and calculation by authors

By analysing the variance we wanted to determine whether the mean variables vary in relation to the group. In our case empirical F value is 38.29, and $p < 0.0001$, indicating that the differences between the groups are significant, systematic. In fact, the differences are statistically significant, Table 2.

Table 2. Results of ANOVA test

Indicators	Indexes				
	RXA	RTA	LNRXA	RC	RCA
Minimum	1.67	1.08	0.51	0.95	0.16
Median	3.54	2.56	1.26	1.23	0.27
Maximum	4.13	2.96	1.42	1.38	0.34
Mean	3.387	2.376	1.181	1.196	0.2571
Std. Deviation	0.8582	0.6976	0.3182	0.1472	0.05736
Std. Error of Mean	0.3244	0.2637	0.1203	0.05563	0.02168
t, df	t=10.44 df=6	t=9.010 df=6	t=9.823 df=6	t=21.49 df=6	t=11.86 df=6
P value (two tailed)	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001
Significant (alpha=0.05)?	Yes	Yes	Yes	Yes	Yes
Coefficient of variation	25.34%	29.37%	26.93%	12.31%	22.31%
ANOVA summary					
F	38.29				
P value	< 0.0001				
P value summary	****				
Are differences among means statistically significant? (P < 0.05)	Yes				
R square	0.8362				
ANOVA table	SS	DF	MS	F (DFn, DFd)	P value

Indicators	Indexes				
	RXA	RTA	LNRXA	RC	RCA
Treatment (between columns)	41.34	4	10.34	F (4, 30) = 38.29	P < 0.0001
Residual (within columns)	8.097	30	0.2699		
Total	49.44	34			

Source: calculation by authors

According to research conducted Ballance (1987) we performed a correlation analysis of the obtained indices, in order to examine the extent to which the indices related to the identification of comparative advantages. In accordance with the finding Lorde et al. (2010), correlation coefficient whose value is greater than 70% is regarded as acceptable. In Serbia we have eight pairs with strong correlation, the correlation above 70%. From these results, three pairs have a negative correlation. As p - value for the correlation mentioned indexes have a value of less than 0.05, we conclude that a correlation exists and co-variant variables. Test of the connection RCA index by applying the Spearman's test shows the existence of correlation bigger than 70% at 6 pairs (two of them are negative), Table 3.

Table 3. The correlation index of the comparative advantages of Serbia

Indexes	r_p					r_s				
	RXA	RTA	LNRXA	RC	RCA	RXA	RTA	LNRXA	RC	RCA
RXA		0.99	0.99	0.72	-0.79		0.96	0.99	0.57	-0.79
RTA	0.99		0.97	0.82	-0.73	0.96		0.95	0.71	-0.67
LNRXA	0.99	0.97		0.67	-0.76	0.99	0.95		0.54	-0.75
RC	0.72	0.82	0.67		-0.33	0.57	0.71	0.54		-0.16
RCA	-0.79	-0.73	-0.76	-0.33		-0.79	-0.67	-0.75	-0.16	

Source: calculation by authors

Results of the research export commodity groups that belong to processed food sector show that from 29 sectors Serbia achieves the maximum value of the index of revealed comparative advantage in 16 commodity groups. We note that in 13 commodity groups there is recorded increase in positive comparative advantage in export. These are the following Product Groups: Milk and products, except butter of cheese - 022; Cheese and curd - 024; Groats and meal of other cereals - 047; Preparations of cereals, flour, starch - 048; Vegetables, roots and tubers, processed - 056; Fruit and prepared products (excluding juices) - 058; Sugar, molasses and honey - 061; Chocolate and other food preparations with cocoa - 073; Animal food (not including un milled cereals) - 081; Edible products and preparations - 098; Non-alcoholic beverages - 111; Alcoholic beverages - 112; Fixed vegetable fats, soft oils - 421; Animal and vegetable fats, oils – 431, Table 4.

Table 4. Values RCA, GL, LFI and Sm index by commodity groups processed food sector of Serbia in period 2005-2011

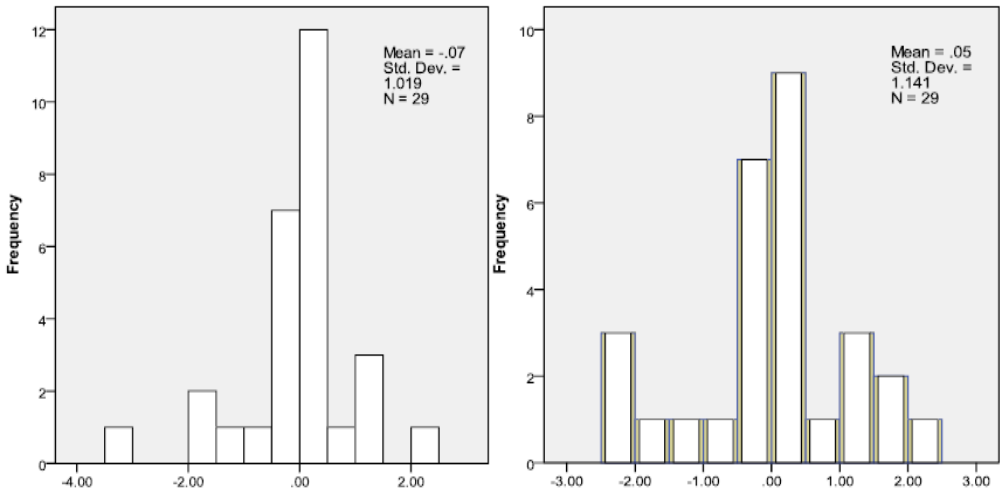
Product groups	2005				2011			
	RCA	GL	LFI	Sm	RCA	GL	LFI	Sm
Meat and edible offal, salted, dried - 016	0.07	0.92	0.01	0.22	-1.04	0.30	-0.01	-3.60
Meat and edible offal, preserved - 017	0.35	0.61	0.14	1.18	0.19	0.84	0.08	0.67
Milk products, except butter or cheese - 022	-0.06	0.93	0.04	-0.19	0.36	0.70	0.16	1.26
Butter and other fats from milk, dairy spreads - 023	0.38	0.59	0.01	1.27	-0.30	0.75	0.00	-1.05
Cheese and curd - 024	0.09	0.90	0.02	0.30	0.40	0.68	0.06	1.38
Birds eggs and egg yolks, fresh, dried, egg whites - 025	-0.35	0.61	0.00	-1.17	-0.52	0.58	0.00	-1.82
Fish, dried, salted, in brine, smoked - 035	0.00	0.00	0.00	-	-0.35	0.71	0.00	-1.22
Fish and crustaceans, molluscs, Preserved - 037	-0.99	0.18	-0.06	-3.32	-2.08	0.06	-0.08	-7.23
Rice - 042	-3.15	0.00	-0.02	-10.56	-1.88	0.08	-0.02	-6.52
Flour, groats and meal of wheat - 046	2.00	0.02	0.08	6.73	1.82	0.09	0.20	6.31
Groats and meal of other cereals - 047	1.26	0.10	0.02	4.23	2.21	0.05	0.04	7.65
Preparations of cereals, flour, starch - 048	0.19	0.78	0.33	0.63	0.51	0.59	0.33	1.78
Vegetables, roots and tubers, processed - 056	0.19	0.78	0.18	0.65	0.29	0.76	0.12	1.02
Fruit and prepared products (excluding juices)- 058	1.16	0.12	1.35	3.91	1.47	0.15	1.21	5.10
Fruit and vegetables juices- 059	0.41	0.56	0.25	1.37	0.15	0.88	0.04	0.51
Sugar, molasses and honey - 061	0.76	0.29	1.47	2.54	1.14	0.26	0.63	3.94
Sugar products - 062	-0.23	0.73	0.02	-0.78	-0.07	0.94	0.02	-0.25
Chocolate and other food preparations with cocoa – 073	0.01	0.99	0.20	0.04	0.32	0.74	0.18	1.11
Animal food (not including unmilled cereals) - 081	-0.42	0.55	-0.02	-1.40	0.39	0.68	0.28	1.35
Margarine and other edible fats - 091	0.48	0.49	0.04	1.60	-0.10	0.91	0.01	-0.35
Edible products and preparations - 098	-0.36	0.60	0.00	-1.21	-0.18	0.85	0.07	-0.63
Non-alcoholic beverages - 111	0.43	0.54	0.09	1.44	1.33	0.19	0.39	4.63
Alcoholic beverages – 112	0.18	0.79	0.27	0.62	0.27	0.77	0.28	0.94
Tobacco, processed - 122	-1.66	0.04	-0.21	-5.56	-0.44	0.64	-0.03	-1.53

Product groups	2005				2011			
	RCA	GL	LFI	Sm	RCA	GL	LFI	Sm
Animal oils and fats - 411	-0.38	0.59	0.00	-1.26	-0.19	0.84	0.00	-0.65
Fixed vegetable fats, soft oils - 421	1.09	0.15	0.34	3.65	1.67	0.11	0.72	5.78
Fixed vegetable fats, oils – 422	-1.79	0.03	-0.04	-6.03	-2.29	0.04	-0.06	-7.94
Animal and vegetable fats, oils - 431	-0.18	0.79	0.01	-0.61	0.32	0.74	0.03	1.10
Essential oils, perfumery products - 551	-1.41	0.07	-0.10	-4.72	-2.05	0.06	-0.12	-7.10

Source: The Statistical Office of the Republic of Serbia and calculation by authors

Chart 1 shows the ratio of the number of commodity groups processed food sector and the value of RCA indicators. The horizontal axis shows the values of RCA indices, and the ordinate the number of products which have the corresponding value of RCA indicators. Analyzing the competitive advantages it can be concluded that the 2011th, had the highest sectors with positive comparative advantage in value of -0.05 to 0.05.

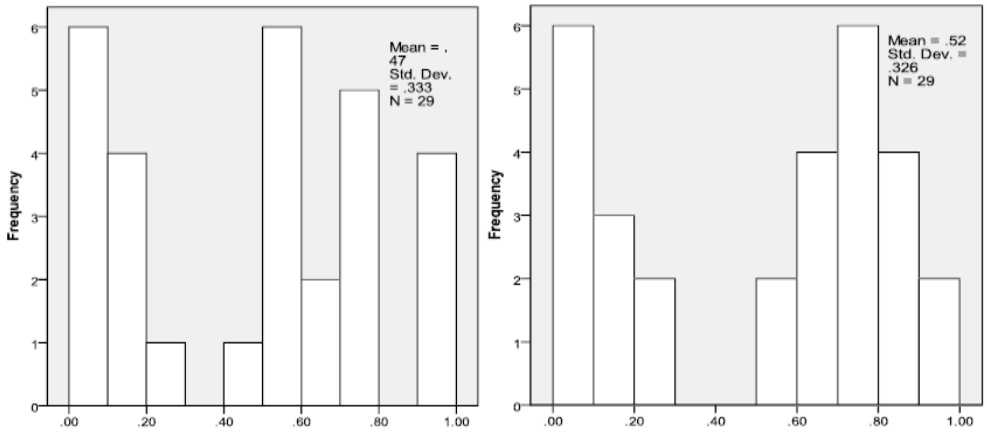
Chart 1. The distribution of values RCA index products processed food sector in 2005 and the 2011



Source: The Statistical Office of the Republic of Serbia and calculation by authors

In research of specialization in international trade, we established the existence of inter-industry, intra-industry trade and a number of products with simultaneous inter-and intra-character exchange. The obtained values indicate that the positive comparative advantage resulting from the absence of imports in certain commodity groups, rather than as a result of the openness of the Trade.

Chart 2. Distribution of GL index values of products processed food sector in 2005 and the 2011

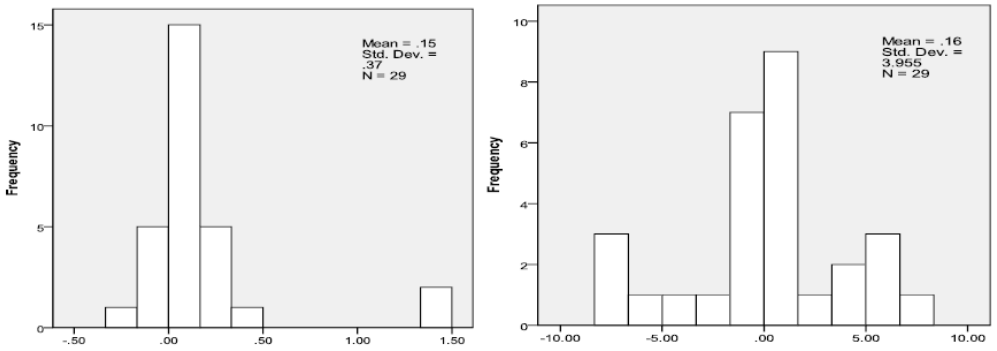


Source: The Statistical Office of the Republic of Serbia and calculation by authors

Chart 2 shows the ratio of the number of products processed food sector and GL values of the indicators. Abscissa shows the values of the indicators GL, and the ordinate the number of products that have a corresponding indicator value GL. Analyzing the specialization in intra-industry trade it can be concluded that in the 2011th the highest product of the inter-character exchanges in the index values of 0.10 to 0.20, and the character of intra-industry trade in the index values of 0.70 to 0.80.

Increasing competitive advantage in exports of products processed food sector measured by Lafay index, have the following product groups: milk products, except butter or cheese (LFI ^{2005} = 0,04, LFI ^{2011} = 0,16); Cheese and curd - 024 (LFI ^{2005} = 0,02, LFI ^{2011} = 0,06); Flour, groats and meal of wheat - 046 (LFI ^{2005} = 0,08, LFI ^{2011} = 0,20); Groats and meal of other cereals - 047; (LFI ^{2005} = 0,02, LFI ^{2011} = 0,04); Animal food (not including un milled cereals) - 081(LFI ^{2005} = -0,02, LFI ^{2011} = 0,28); Edible products and preparations - 098 (LFI ^{2005} = 0,00, LFI ^{2011} = 0,07); Non-alcoholic beverages - 111 (LFI ^{2005} = 0,09, LFI ^{2011} = 0,39); Alcoholic beverages - 112 (LFI ^{2005} = 0,27, LFI ^{2011} = 0,28); Fixed vegetable oils and soft oils - 421 (LFI ^{2005} = 0,34, LFI ^{2011} = 0,72); Animal and vegetable fats, oils 431 (LFI ^{2005} = 0,01, LFI ^{2011} = 0,03);

Chart 3. The distribution of values LFI index of commodity groups processed food sector in 2005 and 2011

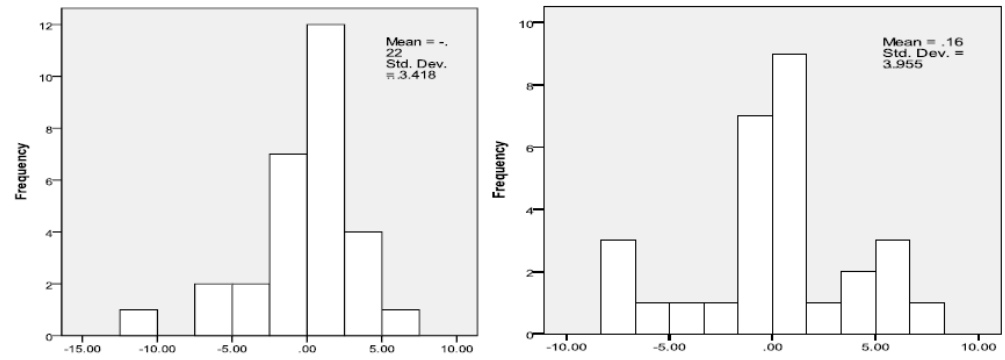


Source: The Statistical Office of the Republic of Serbia and calculation by authors

Chart 3 shows the ratio of the number of products processed food sector and the value of LFI indicators. The horizontal axis shows the values of MFI indicator, and on the ordinate the number of products processed food sector with an appropriate value of the LFI indicators. Analyzing the competitive advantages it can be concluded that in the 2011, the highest products with positive comparative advantage in value from 0.00 to 0.10.

Analysis of the comparative advantages of using a modified Sm index confirms the presence of high comparative advantages of the analyzed products processed food sector measured RCA index. Displayed values of the modified index of comparative advantage have higher values, but the same range of products, which is consistent with earlier findings Ignjatijević et al. (2012) on the values of the modified index. The high value of the RCA and Sm index of comparative advantage is the result of a significant export commodity groups analyzed in the total exports of processed food sector.

Chart 4. The distribution of values Sm index products processed food sector in 2005 and 2011



Source: The Statistical Office of the Republic of Serbia and calculation by authors

Chart 4 shows the ratio of the number of products processed food sector and the value of Sm ratios. The horizontal axis shows the values of Sm indicators, and on the ordinate the number of products processed food sector with an appropriate value Sm indicators. Analyzing the competitive advantages it can be concluded that in the 2011th years, the highest product of positive comparative advantage in value from 0.10 to 0.30.

Conclusion

Results of this research are very important to point out the position of the processed food sector of Serbia within Danube region. We have determined an existence of positive comparative advantage for all five indexes RXA, RTA, ln RXA, RC I RCA in period from 2005 until 2011. Further analysis of variance of data obtained, we concluded that the differences between the indexes are statistically significant. Coefficient of variation is from 12,31% (RC) to 29,37% (RTA), indicating the high stability of the group indexes inside the analyzed period.

Using Persons and Spermans coefficient we examined coefficients correlation for ten matched pairs. Empirical values of the F level are higher than a critical, which implies that no one can reject the null hypothesis that the disparities between the indexes and that is statistically significant. The coefficient of determination of 83.62% indicates that much of the variation of present data is due to the conditions that define a group of five indices. In Serbia we have 8 pairs with strong correlation measured by Pearson index and 6 pairs measured by Spearman index.

After we measured the level of comparative advantage and correlation of RCA index processed food sector as a whole, we have defined the products that belong to the processed food sector, and have a positive comparative advantage. We found that following products showed an increase of comparative advantage (RCA); Milk products, cheese and curd, groats and meal of other cereals, cereal, flour, starch, vegetables, roots and tubers, processed, and prepared fruit, sugar, molasses and honey, chocolate and other food preparations with cocoa, animal feed (not including un milled cereals), edible products and preparations, alcoholic beverages, non-alcoholic beverages, solid vegetable fats, soft oils, animal and vegetable fats, oils. Research specialization in international trade of goods processed food sector using the GL index, we conclude that we have represented and the inter-and intra-industry exchange, which indicates the absence of imports for individual products, but also increase the openness of those products where the present intra-industry trade. Application of modified Sm index, measuring the comparative advantage of exports processed food sector, we found that the same manufacture of the products (which have a comparative advantage as measured by the RCA index) have a positive comparative advantage, but rank much higher.

In terms of the development of cooperation with the countries of the Danube region, as well as the increasing demand for quality products of the food industry exports of agricultural and food products Serbian gains in importance. Improvement the level of competitiveness of the food industry in Serbia was positively influenced by: a stable environment and macroeconomic stability, developed market inputs and equipment, restitution market chains, development of farmers' awareness of the role and importance of market forces. The areas

of activity in order to improve the competitiveness of the food industry in Serbia is primarily an increase in productivity of agricultural production, horizontal and vertical integration of companies in agribusiness, construction of new and improvement of existing irrigation systems, the application of the latest scientific and technical achievements in the field of agriculture, greenfield and brownfield investments into processing capacity.

While we research, the so-called "ex post" analysis of the competitiveness of the food industry, we found that a significant number of products has a positive comparative advantage in exports is needed in the coming period taken a series of measures for further improvement of the status of the product processed food sector. It is necessary to intensify the financing of production for export, market research and promotion of export of agricultural products. Finding alternative models for financing small farmers by forming savings - credit cooperatives and the formation of the Development Bank for lending to agriculture as the way to solve the lack of financial resources. It is necessary to create conditions for the enlargement of (min 5 ha) and incentives for farmers who increasing possessions. In order to reduce the grey market it is necessary to establish a collection of distribution centers and wholesale markets to build regional centers. Finally, we can conclude that we have defined products to can be holders of increasing exports and improving the competitiveness of the food industry in Serbia in the international market.

Literature

1. Affortunato, F., Ciommi, M., Furia, D., Voccaro, E. (2010): *International Specialization And Vertical Differentiation,* The Journal of the Faculty of Economics, Economic, Vol. 1, No. 1, pp. 146-150, University of Oradea, Faculty of Economics, Oradea, Romania.
2. Arsić, S., Čavlin., M. (2013): *Analysis of organic agriculture and its significance in terms of enviroment protection in Serbia,* International Scientific Conference „Sustainable agriculture and rural development in terms of the Republic of Serbia strategic goals realization within the Danube region" - achieving regional competitiveness, Thematic Proceedings, pp. 1176-11193, IAE Belgrade, online at http://mpra.ub.uni-muenchen.de/52472/
3. Balassa, B. (1965): *Trade Liberalization and Revealed Comparative Advantage,* The Manchester School, vol. 33, pp.99-123, John Wiley & Sons Ltd and The University of Manchester, UK.
4. Ballance, R. H., Forstner, H., Murray, T. (1987): *Consistency Test of Alternative Measures of Comparative Advantage,* The Review of Economics and Statistics, Vol. 69, No. 1, pp. 157-161, The MIT Press, Cambridge, UK.
5. Belová, A., Smutka, L., Rosochatecká, E., Bazina, A. (2012): *Competitiveness of Domestic Production of Poultry Meat on the EU Market and on the World Market;* Agris on-line Papers in Economics and Informatics, Vol. 4, No. 4, Czech University of Life Sciences Prague, Faculty of Economics and Management, Papers in Economics and Informatics, Prague, Czech Republic.
6. Bojnec, Š., Fertö, I. (2007): *Comparative advantages in agro-food trade of Hungary, Croatia and Slovenia with the European Union,* Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO), Discussion paper No. 106,

Halle, Germany.

7. Bojnec, Š., Majkovič, D., Turk, J. (2005): *Trade types in Slovenian primary and processed agricultural trade,* Paper prepared for presentation at the XI EAAE Congress - The Future of Rural Europe in the Global Agri-Food System, August 24-27, Copenhagen, pp. 24-27.
8. Buturac, G. (2008): *Komparativne prednosti i izvozna konkurentnost hrvatske prerađivačke industrije,* Ekonomska istraživanja, Vol. 21, No. 2, pp. 47-59, Sveučilište Jurja Dobrile u Puli, Pula, Republika Hrvatska.
9. Buturac, G. (2009): *Regionalne sličnosti i razlike strukture međunarodne trgovine u Hrvatskoj,* Zbornik Ekonomskog fakulteta u Zagrebu, Vol. 7, No. 1, pp.1-16, Zagreb, Republika Hrvatska.
10. Buturac, G., Lovrinčević, Ž., Mikulić, D. (2010): *Macroeconomic Performance, Trade and Competitiveness of South-East European Countries,* The Western Balkans Policy Review, Vol. 1, No. 1, Kosovo Public Policy Center, Prishtina, Republic of Kosovo.
11. Fertö, I., Hubbard, L. J. (2002): *Revealed comparative advantage and competitiveness in Hungarian agri–food sectors,* KTK/IE Discussion Papers 2002/8, Institute of Economics, Hungarian Academy of Sciences, Budapest, Hungary.
12. Fertö, I., Hubbard, L. J. (2001): *Regional comparative advantage and competitiveness in Hungarian agri-food sectors*, 77 EAAE Seminar / NJF Seminar No. 325, August 17-18, Helsinki, pp. 1-13.
13. Gagović, N. (2003): *Komparativne prednosti izvoza Srbije i Crne Gore,* Privredna izgradnja, Savez ekonomista Vojvodine, Vol. 46, No. 3-4, pp.153-175, Novi Sad, Republika Srbija.
14. Grubel, H., Lloyd, P. (1975), *Intra-industry Trade: The Theory and Measurement of International Trade in Differentiated Products*, Wiley, New York, USA.
15. Ignjatijević, S., Matijašević, J., Milojević, I. (2014): *Economic analysis of Competitiveness Processed food sector - A case study for the Danube Countries*, Jökull Journal, Vol. 64, No. 3, pp. 83-104, Reykjavik, Iceland.
16. Ignjatijević, S. (2011): *Komparativne prednosti agrara Srbije u spoljnoj trgovini,* Doktorska disertacija, Univerzitet Privredna akademija, FIMEK, Novi Sad, Republika Srbija.
17. Ignjatijević, S. (2012): *Konkurentnost i specijalizacija prerađivačke industrije Srbije na međunarodnom tržištu*, Ekonomija teorija i praksa, Vol. 4, No. 4, pp. 40-48, FIMEK, Novi Sad, Republika Srbija.
18. Ignjatijević, S., Babović, J., Đorđević, D. (2012): *Balasa indeks u određivanju komparativnih prednosti poljoprivrednih proizvoda u izvozu*, Teme, Vol. 36, No. 4, pp. 1783-1800, University of Niš, Niš, Republika Srbija.
19. Ignjatijević, S., Ćirić, M., Carić, M. (2013): *International Trade Structure of Countries from the Danube Region: Comparative Advantage Analysis of Export,* Ekonomický časopis, Vol. 61, No. 3, pp. 251-269, Institute of Economic Research of Slovak Academy of Sciences and Institute for Forecasting of Slovak Academy of Sciences, Bratislava, Slovak Republic.
20. Ignjatijević, S., Milojević, I. (2011): *Komparativna prednost izvoza poljoprivrednih proizvoda i hrane Srbije i zemalja dunavske regije,* Ekonomika poljoprivrede*,* Vol. 58, SI-1 (1-412), pp. 103-110, BSAAE, Beograd, Republika Srbija.

21. Ignjatijević, S., Milojević, I. (2012): *Competitive food production as a stimulus to economic development in Serbia,* International Scientific Meeting „Sustainable agriculture and rural development in terms of the Republic of Serbia strategic goals realization within the Danube region" - preservation of rural values, Thematic Proceedings, pp. 1496-1512, IAE Belgrade, online at http://mpra.ub.uni-muenchen.de/43195/
22. Ignjatijević, S., Milojević, I., Božić, D. (2010): *Economic aspects of Serbian comparative advantages in exports of vegetable matter,* Agricultural Economics, Vol. 57, SI. 2, pp. 161-165, BSAAE, Belgrade, Republika Srbija.
23. Majkovič, D., Turk, J., Chevassus Lozza, E. (2006): *Agri-food Trade Analysis: Comparison of Slovenia with the Nine new Member States*, Journal of Central European Agriculture, Vol. 7, No. 3, pp. 401-408, Faculty of Agriculture, University of Zagreb, Zagreb, Croatia.
24. Malešević, Đ., Čavlin, M. (2009): *Poslovna analiza*, FIMEK, Novi Sad, Republika Srbija.
25. Qineti, A., Rajcaniova, M., Matejkova, E. (2009): *The competitiveness and comparative advantage of the Slovak and the EU agri-food trade with Russia and Ukraine*. Agric. Econ.–Czech, Vol. 55, No. 8, pp. 375-383, Czech Academy of Agricultural Sciences, Prague, Czech Republic.
26. Raičević, V., Ignjatijević, S., Matijašević, J. (2012): *Economic and legal determinants of export competitiveness of the food industry of Serbia,* Industry, Vol. 40, No. 1, pp. 201-226, Economics Institute, Belgrade, Republic of Serbia.
27. Svatoš, M., Smutka, L. (2012): *Comparative Advantages of the Czech Agrarian Foreign Trade in Relation to the EU and Third Countries,* Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, Vol. 38, No. 4, Mendel University of Agriculture and Forestry, Brno, Czech Republic.
28. Török A., Jambor A. (2013): *Agri-food trade of the New Member States since the EU accession, AGRICULTURAL ECONOMICS-ZEMEDELSKA EKONOMIKA,* Vol. 59, No. 3, pp. 101-112, Czech Academy of Agricultural Sciences, Prague, Czech Republic.
29. Vollrath, T. L. (1991): *A Theoretical Evaluation of Alternative Trade Intensity Measures of Revealed Comparative Advantage*, Weltwirtschaftliches Archiv, The Review of World Economics, pp. 265–279, Institute for the World Economy, Kiel, Germany.
30. Vološin, J., Smutka, L., Selby, R. (2011): *Analysis of external and internal influences on CR agrarian foreign trade,* Agric. Econ – Czech, Vol. 57, No. 9, pp. 422–435, Czech Academy of Agricultural Sciences, Prague, Czech Republic.

MERENJE KOMPARATIVNE PREDNOSTI PREHRAMBENO PRERAĐIVAČKOG SEKTORA REPUBLIKE SRBIJE U FUNKCIJI POVEĆANJA IZVOZA

Svetlana Ignjatijević[4], Miroslav Čavlin[5], Dragomir Đorđević[6]

Apstarkt

Predmet istraživanja je analiza komparativne prednosti izvoza proizvoda prehrambeno prerađivačkog sektora, sa ciljem da se definiše položaj prehrambeno prerađivačkog sektora Srbije u odnosu na dunavsku regiju i istaknu proizvodi koji su u ranijem periodu i koji će u narednom periodu biti nosioci izvoza poljoprivrede Srbije. U istraživanju smo primenili sledeće indekse: RXA, RTA, ln RXA, RC, RCA, LFI, GL, Sm. Dinamički smo sagledali kretanje indeksa u periodu od 2005- 2011. Godine. Istražili smo postojanje korelacije RCA indeksa prehrambeno prerađivačkog sektora i primenom Pearsonovog i Spearmanovog indeksa ustanovili koliko RCA varijable međusobno kovariraju. Ustanovili smo da je kod sledećih proizvoda ostvareno povećanje komparativne prednosti izvoza mereno Balassa indeksom: Mleko i proizvodi, Sir i urda, Prekrupa i brašno od ostalih žitarica, Proizvodi od žitarica, brašna, skroba, Povrće, korenje i gomolje, prerađeno, Voće pripremljeno i proizvodi, Šećer, melase i med, Čokolada i ostali prehrambeni proizvodi sa kakaom, Stočna hrana (osim žita u zrnu), Jestivi proizvodi i prerađevine, Bezalkoholna pića, Alkoholna pića, Čvrste biljne masti, ulja'meka' i Životinjska i biljne masti, ulja.

Ključne reči: *Srbija, Dunavska regija, komparativna prednost, prehrambeno prerađivački sektor*

4 Doc. dr Svetlana Ignjatijević, FIMEK, Cvećarska 2, 21000 Novi Sad, Telefon: +381 21 400 484, E-mail: ceca@fimek.edu.rs

5 Doc. dr Miroslav Čavlin, FIMEK, Cvećarska 2, 21000 Novi Sad, Telefon: +381 21 400 484, E-mail: cmiros@gmail.com

6 Prof. dr Dragomir Đorđević, redovni profesor, FIMEK, Cvećarska 2, 21000 Novi Sad, Telefon: +381 21 400 484, E-mail: djordjevic@fimek.edu.rs

Review Article

Economics of Agriculture 3/2014
UDC: 338:316.334.55(497.11)

INNOVATION OF ORGANIZATION MODEL FOR INTEGRAL RURAL DEVELOPMENT - SERBIA CASE STUDY[1]

Vladimir Nikolić[2], Marko Ivaniš[3], Ivan Stevović[4]

Summary

The experience of the EU in the way of stimulating rural development has been accepted as a starting position in Serbia. The level of economic growth, even in rural areas, despite efforts is not at the desired level. Ways to stimulate rural development process are researched deductively on the example of two municipalities in Sumadija, Serbia. The result of the research pointed to the need to specify the policy of integrated rural development of the municipality and the need to innovate the existing models of organization. It is concluded that the policy of rural municipalities should be directed to: active access to finance, identity politics, and continuing education. Innovation in the organization involves: an Initiative team who prepare the documentation as a basis for decision-making, implementation of agricultural incubator (a symbiosis of business, technology and incubator for a quality management system), and establishing a system of vertical mergers.

***Key words**: Integral Rural Development, the model of organization, an agricultural incubator.*

JEL: *Q180, R1, Q190, M2.*

Introduction

Integrated Rural Development (hereinafter referred to as IRD) is accepted as a concept of agriculture in the Republic of Serbia, including: primary agricultural production, industrial food production, and, the processing of medicinal herbs. IRD "unites the social, economic, cultural, environmental, demographic, spatial, and any other important component of the development of a particular area (Stevanovic et al., 2013), or the

1 Paper is a part of research within the project no. EE 18031 and TR 35030 and it is supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

2 Professor, Ph.D., College Beogradska politehnika, Katarine Ambrozić Street no. 3, 11000 Belgrade, Serbia, Phone: +381 11 297 2264, E-mail: nikolicmvl@sbb.rs

3 Associated professor, Ph.D., Faculty of Economics and Engineering Management, University Business Academy, Novi Sad, Cvećarska Street no. 2, 21000 Novi Sad, Serbia, Phone: +381 63 53 93 67, E-mail: drmivanis@gmail.com

4 Faculty of Business Economics, Singidunum University, Danijelova Street no. 32, 11000 Belgrade, Serbia, Phone: +381 11 308 5717, E-mail: ivan.stevovic11@gmail.com

integrity of social life in local communities with it" (Günther, 2012). The implementation of the concept of IRD directs the (political) decisions of state authorities (state and municipalities), which are focused on economic and organizational measures. Stop the negative demographic trends may be improving the quality of life, therefore, investment in infrastructure, diversification of economic activities and the development of creative industries appropriate to a rural area.

Development of rural areas has multiple importance for any country. To that extent, measures encouraging an integrated rural development exceed, until recently, the dominant, the politics of agriculture. The European Economic Community, and Economic Union comprehend the importance of rural development and launched a project LEADER (acronym in French reads: Liaisons Entre Actions de Development de l›Economie Rurale - a network approach means economic development of rural areas), with the aim of encouraging IRD.

Program Leader I is focused on funding projects based on the presented business plans (Malesevic, 2004). Although this program has given positive results, the following program (LEADER II) has enabled the development of regional and local networks - local action groups (LAGs). The role of LAGs to be operators of development (for municipalities) existing and encourage entrepreneurship. The immediate task of LAGs is to encourage innovation and entrepreneurship with emphasis on the formation of business incubators and clusters.

Stopping the negative tendencies of development of rural areas can be the integration of primary, secondary and tertiary sector. Declaration of Cork (Malesevic, 2004) is introduced multi-partnership (state representatives, business and other subjects), with emphasis on the involvement of local people in creating strategies. Local participation paves the way for traditional forms of solidarity and self-help, characteristic of a particular rural area. Incentives for rural development has been directed toward investments in infrastructure, diversification of farm activities, employment in industry and services (especially tourism), and, improving the quality of life. At the same time, it was developed a process of enlarging the agricultural area within a single farm.

Twenty years ago (1993) were formed County Enterprise Boards (CEB) at the regional level, with the aim of encouraging (horizontal and vertical) connection. Board members, in addition to the director of the local LAGs, are: representatives of state bodies and agencies, non-governmental organizations, trade unions, farmers, local businesses and others. Their role was to: promote the development of entrepreneurship, connecting entrepreneurs with relevant institutions; actively communicate with financial institutions, and government agencies and authorities; provide training and continuing education for a variety of business activities.

However, the application of the concept of IRD, created by the potential of developed states of the European Union (hereinafter EU) is facing some difficulties in countries that are at the approximate level of development as well as Serbia.

Experience in Ukraine indicates problems faced (Moroz, 2013): „Special attention ought to be devoted to promote cooperation between households. Such cooperation should comprise

not only agricultural production activities, but also the processing, storage, transportation, sale of agro-food products, provision of different services, etc. The creation of cooperative structures ought to be initiated by households themselves, rather than being imposed from the outside." It insists on the radical change of the role of rural households and the necessity of understanding the possibilities and advantages of association and the development of industry and services.

Indicative problems IRD observed in Romania, due to its membership in the EU. A survey (Mikulcak, et al., 2013) noted problems in the financing of agricultural holdings. The reason is insufficient compliance with the terms of the concept of EU and limitations of development of agricultural holdings.

Method of research

The subject of this research is the concept of IRD in Serbia, as seen at the municipal level. Focus is placed on the application of established policies and restrictions on agricultural development in Serbia.

Attention is focused on two the municipalities of Sumadija: Rekovac and Smederevo. Municipality Rekovac is extremely underdeveloped municipalities, and in Smederevo rural area covers about 40% of its territory and population. The difference in demographic characteristics, level of economic development and infrastructure, transportation, tourism, and industry resources suggests a deductive approach to the comparative analysis of these municipalities. Internal documents of the observed municipalities are the primary source of data. They were supplemented by the use of various documents adopted by the Parliament and the Government of the Republic of Serbia, Institute of Statistics of the Republic of Serbia, the National Bank of Serbia and other available sources.

The determination of the innovated model of organization (with the aim of accelerating IRD) will include a variety of entities created by the municipality or organizational unit within the administrative authority of the existing forms of association observed in the territory of the municipality. In this regard, it is considered that the innovation model of organization IRD depends on achieving the following hypotheses:

1) It is justified request specifying the IRD policy at the municipal level in the Republic of Serbia.
2) The role of the state (from the bodies of the municipalities to the level of the Republic) is inevitable in the integration of all available resources.
3) Implementation of policy IRD in Serbia depends not only on compliance of the economic measures but also on the established model of organization.

It is understood that the result of the analysis should be formulated in an appropriate proposal.

Analysis of rural development municipalities Rekovac and Smederevo

The present moment development of Serbian economy means inadequate and unstable GDP growth, high unemployment, trade and budget deficits, and high public debt. "In the past twenty years the GDP Serbian economy has been reduced to 60% of the level in the nineties of the twentieth century. Industry participation in the economic structure 2009 was 15.9%, lower than the share of industry Yugoslavia immediately after World War II - about 20% (Stevanovic et al., 2013). "In 2012, there was a negative GDP - a decline of 2%, while public debt has reached 60% of GDP (Stevanovic et al., 2013). However, in the previous year was recorded GDP growth of 2.5% (NBS, 2014), with an increase in the public debt to around 63% of GDP (Ministry of Finance of the Republic of Serbia, 2014). The physical volume of agricultural production in 2013 increased compared to the previous 21.5% (Statistical Office of the Republic of Serbia, May, 2014) turnover in retail trade fell by 2.7%; salaries and wages, expressed in nominal terms, increased by 6.2%, but the real decline of 1.5% (Ministry of Finance, 2014). Inflation has been reduced to about 2.2% (NBS, 2014).

Municipalities Rekovac and Smederevo are in Sumadija and belonging to different regions. Municipality Rekovac Gledic is surrounded by mountains (the highest peak of 922 m above sea level) and the mountain Juhor, between which is a plateau - basins Levac. The municipality of Smederevo is situated along two major rivers: the Danube and Morava and slightly wavy lowland soils. Close to two major rivers are the territory of Smederevo much richer Water Resources in relation to the municipality Rekovac. Air in the municipality of Smederevo and Rekovac and is temperate continental, with approximately the same climatic characteristics.

Among the surveyed municipalities there are significant differences in the number and structure of population and level of economic development. The municipality belongs Rekovac least developed municipalities in Serbia, which is dominated by primary production. Smederevo has significant industrial potential and developed infrastructure solutions.

Table 1. Basic statistics of municipality

Municipality	Number of population	Area [km^2]	Number of resorts
Smederevo	109.809	484	29
Rekovac	10.987	366	31

Source: (Municipality Rekovac, 2011), (Municipality of Smederevo, 2013)

According to the last census, in the city of Smederevo area live more than 60% of the population, and in the Rekovac about 1,600 residents of the municipality. Municipality Rekovac characterized by extremely negative demographic trends. After a period of intense immigration, the latest census shows that the trend of population growth of Smederevo, but with a slightly pronounced negative demographic trends in the past decade.

Very unfavourable age structure is in REKOVAC, with 47.96% of the population older than 55 years (Nikolic and Ivanis, 2013). In addition, unfavourable structure and in terms of the share of highly educated population (total population over the age of 15 years) in the municipality Rekovac (5.3%), while in Smederevo is 8.00%. The age structure of the population is somewhat better in the municipality of Smederevo, where over 55 accounts for over 23% of the total population.

Dominant natural resource in both municipalities is high quality agricultural land (Table 2).

Table 2. Land use categories (in ha), 2012

Indicator		Smederevo (ha)	Share in total agricultural area %	Rekovac (ha)	Share in the total agricultural area (in %)
Agricultural Area - Total		32.980	100	21.636	100
Arable land Cereals	Total	26.826	81,34	12.478	57,67
	Cereals	20.079	60,88	6.623	30,61
	Industrial plants	552	1,67	-	-
	Vegetables	2.966	8,99	1.524	7,04
	Roughage	3.229	9,79	4.331	20,02
Orchards		3.764	11,41	3.174	14,67
Vineyards		1.675	5,08	794	3,67
Pastures and meadows		584	1,77	5.190	23,99
Ponds, swamps and marshes		131	0,40	6	0,003

Source: (Municipality Rekovac, 2011), (Municipality of Smederevo, 2013)

The level of economic activity it is difficult to assess the positive assessment. The situation is somewhat better in Smederevo, with over 13,500 employees and about 9,000 unemployed. On the territory of the municipality there are about 800 legal entities and over 3,000 entrepreneurial activities. Two companies (U.S. Steel and Sinvoz with about 8,000 employees) exist in the expectation strategic partners from abroad. In Rekovac is business actively until about 60 (small and micro) enterprises and about 180 (mostly commercial and craft) shops. And in Rekovac is present problem unfinished process of privatization of agricultural households and industrial facilities. In both municipalities have not been completed bankruptcy of several agricultural enterprises, and the significant areas of agricultural land are not used.

City of Smederevo has a significant investment potential, and is prepared in a more significant area equipped with infrastructure of industrial zones. In the last quarter of 2013 opened the drive with a projection of employment more than 500 workers by the end of the investment (capital originating from Finland).

The municipality invests Rekovac also significant efforts aimed at encouraging rural development: creating documents (strategies and studies) IRD, Regional Planning and planning documents aimed at the design and construction of infrastructure and infrastructure. However, municipalities Rekovac as extremely underdeveloped municipalities, there are no accumulation of its own, and are sent only to the funds in the budget of the Republic of Serbia and donations from abroad.

The problem of infrastructure is especially pronounced in the municipality Rekovac. There are problems of water supply, operation and expansion of the sewerage network. The level of infrastructure development, as well as their own lack of accumulation is one of the limiting factors of rural development of the municipality.

A strong economy and a rich and fertile rural hinterland in Smederevo have well (for the situation in Serbia) road network and connection to Corridor 10, the opportunities for effective use of rail and inland waterway transport. The development of social services in accordance with the level of development and the number and structure of the population surveyed municipalities.

Municipality Rekovac has two elementary schools (with the appropriate number of protruding departments in rural areas) and the High school of Agriculture. From this year, in this municipality was opened a department accredited higher applications agriculture school from Prokuplje, which provided significant potential for improving the education system. Health care is provided by health centre, comprising works several clinics in nearby villages. Sports activities are taking place at an amateur level, and plans are building a sports centre in Rekovac.

On the other hand, the municipality of Smederevo has dissected the structure of primary schools (33 primary schools with 10 000 students) and 6 secondary schools (over 4,000 students). With the help of the Swiss government was formed a regional educational centre with the aim of continuous training of workers in education, or other expert profiles. Hospital in Smederevo engaged more than 280 doctors, dentists and pharmacists. In the municipality operates a cultural centre, library, museum, several galleries and other cultural institutions. In Smederevo seems more sports teams competing at the national level, a variety of indoor and outdoor sports fields for various sports, swimming pool with hot (geothermal) water.

Strategy of Sustainable Development of Rekovac (2011) pointed out the strategic objectives: the development of local infrastructure, the principles of sustainable development and environmental protection (Stevovic et al., 2014), development and adoption of urban-planning documents, in order to create favorable conditions for attracting investments, that is, the promotion of small and medium-sized enterprises and entrepreneurship; improving the quality of life of all citizens and the development of programs aimed at young people and their survival in the municipality Rekovac (Stevovic et al., 2011).

In Smederevo goals are directed towards comparative advantage: support existing industry and attract investment; development of transport (three modal transport); active measures to support the development of agriculture and manufacturing industry, i.e., the development of tourism. It also recognizes the importance of acquiring and applying knowledge, active management of demographic policy and environmental protection.

Politics IRD in Serbia

Economic effects of IRD in Serbia (research-proved the condition of the given sample) indicate the need to review the established organization.

Problem capabilities of local administrative units to have them direct and strengthen rural development, there has been a few years ago. The National Programme for Agriculture Serbia 2010-2013 (Ministry of Agriculture, 2010) is recommended that one should "support the construction of regional and local institutions to support rural development." The same document emphasized that it should "organize programs directed towards strengthening the capacity of regional and local institutions to support rural development." It was found that the units of local self-government may establish legal entities in support of the implementation of agricultural policy and rural development. Then, in the National Programme for Rural Development (2011) points out that "the development of an institutional framework directly affects the access of rural population to physical capital, financial and other services, technologies and markets, which determines the benefit of production as a result of using this capital and service".

Experience IRD in Ireland, showed that seeks to establish an appropriate network organization. Bearing in mind the recommendations, it is the EU, and Serbia is specified organizational model that is expected to contribute to the faster development of rural areas. In line with these recommendations, in Serbia in the municipalities put into practice modelled the LAGs, i.e., the regional development centres. It is encourages the establishment of business incubators and clusters. Activities are being undertaken continuing education in agricultural production, i.e., mentoring with the goal of self-employment (mostly youth and other vulnerable groups). In addition, within each municipality operates Agricultural Development Fund.

However, the achieved level of rural development shows that the existing measures do not give the expected results. Demographic trends, and still have negative tendencies. Communal infrastructure development is slow, and the working conditions and quality of life do not have sufficient appeal to the younger population. It is ignored the politics of land management. Also, absent efforts to merging of agricultural land (commassation, for example) Cooperatives is suppressed, and clusters (as initiators of horizontal integration) and business incubators (aimed at entrepreneurship development) do not provide the desired results.

In accordance with the aforementioned, it is proposed to focus IRD at the municipal level to: 1) an active policy of providing access to financial resources; 2) potentiating of identity politics; 3) the development of a knowledge-based, and 4) innovation model of organization (Dlesk et al., 2013).

(1) The real sources of financing rural development funds are: the budget of the Republic of Serbia, the various EU funds, domestic and foreign investors, and of course, its own funds the municipality and its inhabitants. The role of local government is very important in attracting assets from these sources of financing already prepared projects,

and attracts investment. However, the expected amount of incentives and investments (certainly no more than 1-2 billion per year) is not sufficient to solve the current problems of IRD. Experiences in Romania, Ukraine and Serbia suggests that support for further development should primarily be sought in their own natural resources and available human resources.

(2) An amount of commodity excess that Serbia has to offer on the international market is relatively small. However, foods of plant and animal origin originating in Serbia have the quality that allows them to successful market. Identity politics means the performance of the market with products that have a brand and protected geographical origin or characteristics of traditional food. Products that have secured traceability of products from a particular geographic area, as well as built a tradition of production have the potential for more economic efficiency.

(3) Creation of excess demands of agricultural households that have knowledge of a wide spectrum. Modern food production include: proper application of agro-technical measures; proper selection of plant material, and racial composition of the livestock; provision of health food products; measures to preserve the environment; abilities and skills to use information technology; knowledge of the market economy in agriculture. Contemporary international trade is characterized by increasingly high demands of security health safety, and thus the introduction of the program and standards of safety and quality in the agricultural and manufacturing sector (HACCP, Codex Alimentarius, ISO, and GLOBALG.AP). Continuity in education, set on a large scale, is the main instrument for achieving development goals. Namely, how natural resources are scarce and limited - human potentials, its ability to innovative work - a key pillar of rural municipalities.

(4) The achieved level of rural development, strong fluctuations in the physical volume of agricultural production and the lack of desired results point to the need to upgrade existing models of organization. A similar conclusion is suggested in the above mentioned survey in Romania suggests to "bridge the existing organization" IRD in the EU (Mikulcak, 2013).

Innovation in the organization of rural development in Serbia

The purpose of the innovation of the institutions of rural municipalities is balanced development that leads to raising the quality of life. The starting point is the acceptance of the need: Strengthening the role of the municipal administration in stimulating the IRD, as a social movement of strategic importance, and the introduction of innovations in all aspects, including innovation model of the IRD.

The first step in updating the model of the development of rural areas is the formation of the Initial team at the municipal level. The Initial team would consist of representatives of local authorities, business associations, non-governmental organizations, business entities (companies, banks and other financial institutions), as well as scientific and professional staff. It is understood their volunteer involvement, similar to the Irish experience. The Initial team is the realization of the concept of IRD in all relevant dimensions.

Emphasis is placed on the role of the Initial team in establishing mini industrial plants. Structure Activity mini production facilities include the processing of foodstuffs of plant and animal origin, variety of alcoholic and non-alcoholic beverages; production of organic feed and extraction of medicinal plants. It is estimated that these projects require a relatively modest amount of investment from 50 – 100,000 Euro. The backbone of investing in mini-industrial plants would be a public-private partnership. Applying this concept will be to facilitate access to funds (domestic and foreign) that normally donate or invest in the development of underdeveloped areas. In this context, identity politics gained importance.

Example of Smederevo shows another possibility of innovation in the organization of rural development. In this city there are about sixty thousand inhabitants in the urban environment, with a strong industrial tradition. The task of Initial team may be creating a market in its own territory. For example, reliance on renewable energy sources (geothermal, thermal solar energy) can have multiple effects on economic development and quality of life in rural areas. At the same time, the experience gained engineering organizations would allow performance at home, and the growth and performance in the international market.

The second step and the development of the network of the IRD is a review of the characteristics and role of business incubators: helping entrepreneurs two to five years after establishment (rent space on favourable terms, accounting, legal advice, etc.). Business incubators (with conventional roles), in conditions of deep crisis, and with the current credit conditions in the banking market are not fertile ground for their activities in rural areas.

A key element of the innovation model of the IRD on the territory of is the establishment of agricultural incubators. Agricultural incubator simultaneously with business incubator should include technology incubator, and the incubator for the implementation of the quality management system (QMS), (Nikolic et al., 2008).

Contemporary business requires the application, including the transfer of agricultural technology (Nikolic, 2005) in the IRD: primary production and in the activities of mini-industrial plants.

The introduction of incubators for QMS is caused by creating the conditions for participation in the market (large retail chains in the country and abroad). Introducing standards require technical support, and then control its implementation, with the aim of ensuring performance in domestic and international markets.

Self-conquest of the above knowledge beyond human potential farm in Serbia, and in this fact is the reason for necessity of the establishment of agricultural incubator.

It is pointed out that the effect of technology incubators and incubators (QMS) is necessary to establish the vertical connectivity: science (research institutions, technology parks) - region (Innovation Centre) - Municipalities (development and consulting organization).

The third step of the innovation IRD is horizontally and vertically, connecting businesses (agricultural household, mini-industrial facilities, business services - logistics, tourism, etc.). To perform in the domestic and international markets, appropriate association (cooperatives,

business associations, clusters) can be made for the necessary concentration of capital market performance and providing funds for investment in the future.

Conclusion

The concentration of population in urban areas (which grow to megalopolis) indicated the need for a balanced development of rural areas. According to the practice EU and in Serbia accepted the concept of IRD as a support in improving the quality of life in rural areas.

Project future of the village with agricultural policy that encourages the enlargement of agricultural households ("full-time farms), their rationalization and specialization, and finally the design and establishment of desirable rural and agrarian structure indicating and economically sustainable farms presupposes the selection of appropriate and effective policies IRD, which is an integral part of the policy of economic development.

Comparative analysis of rural areas in the two municipalities (Rekovac and Smederevo), confirmed the date hypothesis and indicated the need for:

- The necessity of strengthening the role of the state in encouraging IRD;
- Focusing policy IRD municipalities in the provision of financial resources, identity politics, and organization of continuing education;
- Innovation of the existing model of rural development.

The innovation of the existing models of the IRD is proposed in three areas: creating innovative teams; formation of agricultural incubators and the activities of the horizontal and vertical connections.

References

1. Dlesk, M., Nikolić, M. V., Sinkević, N. (2013): *Studija integralnog ruralnog razvoja opštine Rekovac 2013-2017*, Opština Rekovac.
2. Günther, F. (2001): *Ruralisation – integrating settlements and agriculture to provide sustainability*, Proceedings from the NJF seminar no. 327 - 'Urban Areas – Rural Areas and Recycling – The Organic Way Forward?', pp. 81-96, Copenhagen, Denmark, available at: http://holon.se/folke/written/stuff/ines/njfart.pdf
3. Malešević, K. (2004): *Irsko iskustvo ruralnog razvoja - moguće pouke za Srbiju*, Ekonomski Anali, vol. 49, no. 163, pp. 183-202.
4. Mikulcak, F., Newig, J., Milcu, A. I., Hartel, T., Fischer, J. (2013): *Integrating rural development and biodiversity conservation in Central Romania,* In: Environmental Conservation, Cambridge University Press, Vol. 40(2), pp. 129 – 137.
5. Ministarstvo finansija Vlade Republike Srbije (2014): *Makroekonomski i fiskalni podaci*, (20. maj 2014), available at: www.mfin.gov.rs/pages/issue.php?id=3
6. Ministarstvo finansija Vlade Republike Srbije (2014): *Makroekonomska kretanja*, available at: www.mfin.gov.rs/UserFiles/File/tabele/2014%20maj/Tekuca%20makroekonomska%20kretanja%20mfin%2021.pdf

7. Moroz, S. (2013): *Rural Households in Ukraine: Current State and Tendencies*, Economics of Agriculture, vol. 60, no. 3, IAE Belgrade, pp. 565-584.
8. *Nacionalni program ruralnog razvoja*, Službeni glasnik Republike Srbije, бр. 15/11.
9. Narodna banka Srbije (NBS), available at: www.nbs.rs/internet/cirilica/80/index.html
10. Nikolić, M. V. (2005): *Diptih o organizaciji poslovanja*, Viša politehnička škola, Beograd.
11. Nikolić, V., Cvijanović, J, Grujičić, Ž. (2008): *Model organizacije klastera prehrambenih proizvoda u Srbiji*, Industrija, Ekonomski institut Beograd, vol. 36, no. 2, pp. 77-95.
12. Nikolic, V. M., Ivanis, M. (2013): *Possibility of integrated rural municipality of Rekovac*, Thematic Proceedings: Sustainable Agriculture and Rural Development in Function of Achieving Strategic Goals of Republic of Serbia within the Danube Region, Topola, Serbia, December 2013, IAE Belgrade, pp.
13. Opština Rekovac (2011): *Strategija održivog razvoja opštine Rekovac*, 2011-2015, Rekovac.
14. Opština Smederevo (2013): *Koncept održivog razvoja opštine Smederevo*, *2008-2013,* Smederevo.
15. Regionalna agencija za ekonomski razvoj (2011): *Strategija održivog razvoja* Šumadije *i Pomoravlja 2011-2021*, Kragujevac.
16. Stevanović, S., Milanović, M., Milačić, S. (2013): *Problems of the deindustrialization of the Serbian economy,* Economics of Agriculture, IAE Belgrade, vol. 60, no. 3, pp. 465-477.
17. Stevovic, S., Devrnja, N., Calic, D. (2011): *Environmental impact quantification and correlation between the site location and the contents and structure of Tansy,* African Journal of Biotechnology, Vol. 10(26), pp. 5075-5083.
18. Stevovic, S., Milosevic, H., Stevovic, I., Hadrovic, S., (2014): *Sustainable management of water resources in Prokletije region,* Industrija, Ekonomski Institut Beograd, vol. 42, no. 1, pp. 131–146.
19. Vlada Republike Srbije (2008): *Nacionalna strategija održivog razvoja*, SG RS, 57/08, Beograd.
20. Vlada Republike Srbije (2010-a): *Nacionalni program poljoprivrede Srbije 2010-2013*, Beograd, available at: www.mpt.gov.rs/download/nacionalniProgram.pdf
21. Zavod za statistiku Republike Srbije, 2014, Beograd (prema posebnom upitu, maj, 2014)

INOVACIJA MODELA ORGANIZACIJE INTEGRALNOG RURALNOG RAZVOJA U SRBIJI

Vladimir Nikolić[5], Marko Ivaniš[6], Ivan Stević[7]

Rezime

Iskustva EU u načinu podsticanja ruralnog razvoja prihvaćena su kao početna pozicija u Srbiji. Stepen privrednog rasta, pa i na ruralnim područjima, i pored uloženih napora nije na željenom nivou. Način podsticanja procesa ruralnog razvoja deduktivno je istraživan na primeru dve opštine u Šumadiji, Srbija. Rezultat istraživanja je ukazao na potrebu preciziranja politike integralnog ruralnog razvoja opština i na nužnost inoviranja postojećeg modela organizacije. Zaključuje se da politika razvoja ruralnih opština treba da se usmeri ka: aktivnom pristupu izvorima finansiranja, politici identiteta i permanentnom obrazovanju. Inovacija modela organizacije obuhvata: formiranje inicijativnog tima koji priprema dokumentaciju kao podlogu za proces odlučivanja, uvođenje poljoprivrednog inkubatora (kao simbioze poslovnog, tehnoloških i inkubatora za sistem menadžmenta kvalitetom), i uspostavljanje sistema vertikalnog udruživanja.

Ključne reči: *integralni ruralni razvoj, politika razvoja opština, model organizacije, poljoprivredni inkubator.*

5 Prof. dr, VŠSS Beogradska politehnika, Katarine Ambrozić 3, 11000 Beograd, Telefon: +381 11 297 2264, E-mail: vnikolic@politehnika.edu

6 Vanredni professor, dr, Fakultet za ekonomiju i inženjerski menadžment, Univerzitet Privredna Akademija, 21000 Novi Sad, Cvećarska 2, Srbija, Telefon: +381 63 53 93 67, E-mail: drmivanis@gmail.com

7 Fakultet za poslovnu ekonomiju, Univerzitet Singidunum, Danijelova 32, 11000 Beograd, Srbija, Telefon: +381 11 308 5717, E-mail: ivan.stevovic11@gmail.com

Review Article

Economics of Agriculture 3/2014
UDC: 347.728.2

REPORTING ON THE REASONS FOR THE ACQUISITION OF OWN SHARES[1]

Vladan Pavlović[2], Janko Cvijanović[3], Srećko Milačić[4]

Summary

Mere knowledge that the company has acquired own shares is not always of great importance. Information on the acquisition of own shares from dissenting shareholders or the squeeze-out of minority shareholders is not of great importance to the users of financial statements. In the first case, it is far more significant to disclose the significant event that allowed dissenting shareholders to resign from the company. However, the purchase of own shares due to certain reasons, such as the purchase of own shares at a premium in order to influence the market value of shares, the repurchase focused on preventing greater harm to the company, which is especially true at a time of financial crisis, or the repurchase of own shares as a means of disbursing shareholders, is of great importance to the users of financial statements. Therefore, modern legislation in developed countries obliges companies to disclose a range of information regarding own shares, including the reasons for the acquisition. The above is also proscribed by the relevant EU directives and national legislation. The paper points out that the legal norms governing the obligation of reporting on own shares in Serbia are not harmonized and that most public companies in Serbia, despite the legal obligation, do not disclose the reasons for the acquisition of own shares.

Key words*: own shares, reporting, management report, notes to financial statements*

JEL: *M41, G32, K22*

1 This paper is a part of the results of the research on Project 179001 supported by the Ministry of Education and Science of the Republic of Serbia.

2 Vladan Pavlović, Ph.D., Full Professor, University of Priština, Faculty of Economics (Kosovska Mitrovica), Kolašinska Street no. 156, Kosovska Mitrovica, Phone: +381 28 497 934, E-mail: vladan.pavlovic@pr.ac.rs

3 Janko Cvijanović, Ph.D., Principal Research Fellow, Economics Institute, Belgrade, Kralja Milana Street no. 16, 11000 Belgrade, Phone: +381 11 361 31 17, E-mail: jankocvi@eunet.rs

4 Srećko Milačić, Ph.D., Full Professor, University of Priština, Faculty of Economics (Kosovska Mitrovica), Kolašinska Street no. 156, Kosovska Mitrovica, Phone: +381 28 497 934, E-mail: srecko.milacic@pr.ac.rs

Introduction

The growing importance of capital markets and the liberalization of regulations has contributed to intensive purchase of own shares. Own shares can be acquired in order to reduce the shareholders' capital, which refers to a special acquisition of shares, or for any other reason, which refers to a general acquisition of shares, where the shares must be disposed of or cancelled within the statutory deadline (International Finance Corporation, 2008). In the United States of America today, the acquisition of own shares stands for the most commonly discussed topic in the field of finance during boardroom meetings (Henry, 2004). The above-stated belief is not surprising when one takes into account the fact that according to some estimates, over the course of years more shares have been purchased than issued (Todorović, 2008). Expansion of the purchase of own shares appeared in the United States of America after 1980s, primarily as a mechanism of shareholder disbursement, which led to the fact that the programs of the purchase of own shares started being viewed as a means of payment of excess cash to investors. Dominance of the purchase of own shares in the USA as an alternative to dividend payment has resulted in the fact that literature covering this field has expanded the term "dividend policy", so that this term no longer implies a profit distribution policy, but also the money disbursed to shareholders through the purchase of own shares (Pavlović, 2010). Therefore, American literature always places the purchase of own shares with the intention of disbursing shareholders in the first place when stating the reasons for the acquisition of own shares (Pavlović, 2010). However, there are many other reasons that guide companies towards the acquisition of own shares.

If it is legally possible, there can be several methods for the acquisition of own shares available to companies. The most commonly used methods are: the fixed price tender offer, the Dutch auction, the open market repurchase and the purchase of shares on the basis of direct negotiations with shareholders who own significant percentage of equity. Preference for the purchase method stems from the aim underlying the purchase and a specific situation that the company is facing.

Reasons for the acquisition of own shares

If there are no legal restrictions, companies purchase own shares for the following reasons:(1) disbursement to shareholders; (2) stimulating employees, primarily management of the company without increasing the total number of shares (stock options); (3) an increase in the stock exchange share price; (4) the acquisition of equity in other companies where the purchased shares are used as a means of payment or coverage for issued convertible securities, or bonds that can be converted into equity (convertible bonds), or as a coverage for the warrants issued; (5) the realization of the capital gain upon subsequent sales; (6) prevention of a hostile takeover; (7) the force of law; (8) supporting share liquidity maintenance agreement (Pavlović, 2010).

When the issue of the acquisition of own shares in Serbia is taken into account, the current Companies Law ("Official Gazette of RS", No. 36/3011 and 99/2011) is the most liberal law so far. The legislator adopted a mixed system of the acquisition of owns shares (public

or non-public). Specifically, the law enables joint stock companies to acquire own shares: (1) directly on the basis of the decision reached by the General Assembly of the company, where no specific reasons for the acquisition of own shares are stated; on the basis of this, the law joined the modern trend not to prescribe the basis for the acquisition of own shares (legal restrictions are listed), and, exceptionally, (2) based on the decision made by the board of directors or supervisory board if the management of the company is bicameral, but only if the acquisition of shares is based on one of the reasons explicitly stipulated by the Article 282 of the law. Therefore, the acquisition of own shares is allowed (1) if it is necessary to prevent greater and immediate harm to the company; (2) if the shares acquired are to be distributed to the company's employees or affiliates, or as a reward to the members of the board of directors or executive and supervisory board if the management of the company is bicameral, under specific prescribed conditions that must be met.

Therefore, the decision to acquire own shares should be made by owners in their own interest, which is close to reality if the decision is made directly at the shareholders' meeting. However, if the owners make a decision indirectly, through the representative acting on their behalf, at the meeting of the supervisory board (or otherwise)the owners' interest can be blurred or suppressed by distortions which are, in fact, different forms of agency problems resulting from the separation of ownership and management (Cvijanović et al., 2010).

Companies can acquire own shares without any special conditions defined by the Article 282 in the following cases: (1) the institution of protecting the rights of dissenting shareholders, in the following cases (Article 474): (a) by the change in the company's statutes that reduces shareholders' rights defined by the statute or the law; (b) by the change of the status;(c) by the change of the legal form;(d) by making a decision on the change in the duration of the company; (e)by making the decision on the approval of the acquisition or disposal of major assets;(f) the adoption of certain decisions that alter certain rights defined by the company's statute;(g) the decision on the withdrawal of one or more classes of shares from the regulated market or multilateral trading platform; (2) as a result of the exclusion of shareholders; (3) during unencumbered acquisition of own shares; (4) as a result of changes in status; (5) on the basis of a court decision; (6) if the shares are acquired for the purpose of conducting the procedure of capital reduction; and (7) squeeze-out of minority shareholders (Article 515).

The above-stated solutions represent a significant improvement in relation to the solutions provided by the previous law. In fact, previous Companies law ("Official Gazette of RS"No.125/2004) also stipulated that companies can acquire own shares directly on the basis of the decision of the company's assembly, without stating special reasons for the acquisition of own shares, and exceptionally, based on the decision of the management board, with the purpose of distributing them to the employees of the company or affiliates and to prevent major and immediate harm to the company (Article 222).However, proscribing that the company can acquire own shares only with the method pro-rata, the legislator, in fact, prevented the acquisition of own shares aimed at preventing harm to the company (Pavlović, 2010). By proscribing the method pro-rata as the binding method, the legislator improperly

operationalized the principle of equality of shareholders in the acquisition of own shares. Specifically, the above-stated principle is in contemporary legislations understood as equality of opportunities, and not of results (Parać, 2009). The acquisition of own shares with the intention of preventing harm to the company was made possible later, in an extremely inappropriate manner. In fact, on 19 January 2006, the Securities Commission issued an opinion (No. 3/0-04-617/8-05) which completely repudiated the mentioned provision and allowed the acquisition of own shares on the stock exchange (1) in the case of the need for prompt response due to market disruption in order to prevent serious and immediate harm to the company; (2) for the purpose of acquiring the missing number of shares after conducted public offering (Pavlović, 2010).

Some authors (Dittmar, 2000; Weston and Sui, 2003) point out those different motives dominates certain periods. Subsequent studies confirm that the level of economic activity affects the prevalence of specific motives for the acquisition of own shares, that is, that the motives for purchasing own shares are affected by the economic cycles (Albouy and Morris, 2006). Albouy and Morris confirm the hypothesis that during the period of low economic activity, companies purchase own shares primarily with the aim of removing information asymmetry, that is, sending the signal to investors that the shares are undervalued, while in the period of intense economic growth, companies purchase own shares primarily to avoid reducing earnings per share caused by issued employee stock options (Pavlović and Muminović, 2011).

Weston and Sui (2003) claim that the main motive for purchasing own shares at the beginning of the 1980s was market undervaluation of shares. In the mid-eighties, motives related to the fiscal benefits and the defense from the takeover was dominant. The main motive for purchasing at the end of the 1980s, at the time of the stock market crash, was the acquisition of undervalued shares. Finally, since the late 1990s until the outbreak of the current financial crisis, the acquisition of own shares was mainly motivated by the prevention of the decrease in earnings per share due to the issuance of stock options (Pavlović and Muminović, 2011). The current economic and financial crisis has led to changes in the volume of acquisition of own shares, as well as to changes in the prevailing motives. In most cases, faced by strong influence of the financial crisis on the financial markets (Ljumović, 2009; Stevanović et al., 2010), companies have to acquire own shares in order to prevent harm to the company caused by the falling stock exchange share price.

The importance of reporting on the reasons for the acquisition of own shares

It is widely believed that from the investors' point of view, purchase of own shares has a positive connotation. Plenty of studies(Comment and Jarell, 1991; Bartov, 1991; Ikenberryet al., 1995; Dann, 1981; Grullon and Michaely, 2004; Li and McNally, 2000; Vermalean, 1981; Liano et al., 2003) have supported this widely accepted stance, arguing that mere announcement of the purchase or the purchase of own shares itself has a positive effect on the stock market value of the shares. Literature records the view that the positive aspect of the acquisition of own shares does not only have to be reflected in the stimulation of the growth of the market value of shares, but also in avoiding wrong decisions related to the

disposal of excess cash, such as, for example, irrational acquisitions. Specifically, it is a well-known phenomenon that management often supports the growth of the company in order to justify increasing income, thus increasing the company's importance on the financial stage. However, the purchase of own shares can be seen as a failure of management to find attractive investment projects, that is, the lack of development skills and vision. It is ironic that the assistance obtained from the United States for the revival of the economy prompted the purchase of own shares. Specifically, the companies used the money received for the purchase of own shares mainly, instead of investing it in the financing of production and consumption (Mitrović, 2009).

In the context of the negative perception of the purchase of own shares, it is important to point out the following fact. In the late twentieth century, the purchase of own shares was seen primarily as a form of payment of surplus cash to investors. In recent years, more and more companies have resorted to borrowing in order to finance the purchase of own shares, and some companies even finance entire purchase by debt. More often than not, the above practice has had consequences on the financial flexibility of companies, occasionally leading to a significant deterioration in the financial position of the company (Pavlović et al., 2011).

It is, therefore, not surprising that some recent studies suggest that the purchase of own shares results in the decline in return on total assets, with the company that made the biggest purchase recording the largest yield decline (Pavlović and Muminović, 2011).

Therefore, neither does the purchase of own shares in itself increase the value of shares, nor does it necessarily stand for a good signal. The expected effects of the purchase are directly related to the reasons for which the companies opt for the purchase of own shares, financing the purchase and the financial position of the company. It is, therefore, natural that the users of financial statements, especially investors, are interested in understanding the reasons for which the company acquires own shares, and subsequently to know the fate of these shares. In addition to the potential effect on the stock exchange share price, insight into the reasons for the acquisition of own shares allows the users of financial statements to better understand the position of the company. For example, the purchase motivated by shareholders disbursement may indicate the lack of development capacities.

The current crisis has particularly intensified the purchase of own shares. However, in crisis conditions, the acquisition of own shares motivated by preventing the falling of the stock market value of shares may go in favor of speculative investors, to the detriment of persistent investors, if the purchase of own shares does not achieve the desired effect. Therefore, in such circumstances, disclosure of the reasons for acquiring own shares gains growing importance.

The research subject is of great importance, especially when one bears in mind the frequent misuse in the process of acquisition and disposal of own shares that has been observed in current practice (The previous stance represents the attitude held by the Securities Commission; Opinion of the Securities Commission No. 2/0-03-117/2-12 from 07.05.2012.).

Normative framework of reporting on the reasons for the purchase of own shares

The reporting on own shares in Serbia is regulated by the Companies law ("Official Gazette" No. 36/3011 and 99/2011), the Law on Accounting ("Official Gazette", No. 62/2013) and the Law on the Capital Market ("Official Gazette" No. 31/2011) which relates exclusively to the public companies.

In contrast to the Law on Companies of 2004 ("Official Gazette" no. 125/2004), which did not mandate the obligation of external reporting on the reasons for the acquisition of own shares, the current Companies law ("Official Gazette" No. 36/3011 and 99/2011) explicitly stipulates the obligation of external reporting on own shares. In accordance with the Article 289 of the law, the company which acquired or disposed of own shares during the fiscal year is obliged to fill the annual financial statements for that fiscal year with the following: (1) the reasons for the acquisition; (2) the type, the class, the number and the par value or the book value of shares without par value, own shares acquired and disposed of during that year, as well as their share in the share capital;(3) the price at which these shares were acquired or disposed of; (4) the type, the class, the total number and par value or the book value of shares with no par value, own shares of the company at the end of that fiscal year, as well as their share in the share capital of the company. The above-stated provisions apply equally to public joint stock companies, as well as the joint-stock companies whose financial instruments are not traded on the regulated market.

It can be stated that the above-stated solution stands for a significant improvement in relation to the previous Companies law ("Official Gazette" No. 125/2004), according to which external reporting on own shares was not required, but only informing of the shareholders assembly. Specifically, the previous Companies law (Article 289) mandated solely the obligation of the board of directors to inform the shareholders assembly at each annual meeting about the reasons for the acquisition, the number and par value of shares or the book value of shares without par value, an indication of whether the company has acquired shares with or without compensation, stating the amount and the number of own shares that the company already holds and the number of own shares that have been reissued.

The current law imposes an obligation on the board of directors of the public joint stock company, i.e. the supervisory board if the management of the company is bicameral, to inform the shareholders about the reasons and the manner of acquisition of own shares, the number and the total par value or the total book value of shares without par value, their share in the share capital of the company as well as the total price for which the company acquired them, but only if the shares were acquired in order to prevent serious and immediate harm to the company (Article 282). It remains unclear why the law did not proscribe the obligation to inform the assembly of the reason for the acquisition, if own shares were acquired for distribution to the employees or to reward members of the board of directors or executive and supervisory board if the management of the company is bicameral.

It is necessary to point out another flaw of the current Companies law. Specifically, the legislator requires the company to report on own shares in the financial statements, although the reporting on own shares can be done only through one financial statement, namely Notes

to the financial statements. What is more, it is far more appropriate to report on that issue in the Management report, which is not part of the financial statements.

Mandatory disclosure of the reasons for the acquisition of own shares in the Management report is required by the Directive 2013/34/EU within Chapter 5 – Contents of the management report, or the Directive 2012/30/EU(Article 24, paragraph 2) to which Article 19 (2) of the Directive 2013/34/EU refers. Obligation to disclose the reasons for the acquisition of own shares in the Notes to the financial statements relates only to the companies classified as small legal entities if their member state does not oblige them to draw up the management report (Article 19, paragraph 3 of the Directive 2013/34/EU).

The current Law on Accounting ("Official Gazette", no. 63/2013) also imposes an obligation of reporting on the acquired own shares, but unlike the Companies law, it does not explicitly state which information relating to the company's own shares must be disclosed. Specifically, Article 29 of the Law on Accounting imposes an obligation on the legal entities to compile Annual management report (with the exception of micro, small and medium-sized companies, excluding the public companies, which are not required to compile this report) and determines the content of the Annual management report, thus imposing an obligation in Paragraph 7 to disclose information on the purchase of own shares and their share in the share capital. It can be seen that in contrast to the Companies law, which requires reporting on own shares in the financial statements, the Law on Accounting imposes an obligation of disclosure of information on own shares in the Annual management report, which complies with the requirements of the Directive 2013/34/EU, that is, the Directive 2012/30/EU and certainly stands for a more appropriate solution. It is true that the Law on Accounting imposes an obligation of disclosure of information on own shares in the Notes to the financial statements, but only in relation to legal entities which are not legally obliged to draw up Annual management reports and are required to draw up Notes to the financial statements, which is identical to the solution proscribed by the Directive 2013/34/EU. It may be noted that the current Law on Accounting represents an improvement in relation to the former Law on Accounting and Auditing ("Official Gazette" No. 6/2006, 111/2009 i 99/2011and 46/2006), which did not impose an obligation on companies to report on own shares. However, it would be even better if it was explicitly stated which information related to own shares companies are required to disclose, as has been done in the current Companies law on and the Law on the Capital Market.

Law on the Capital Market ("Official Gazette" No. 31/2011), just like the Companies law, explicitly requires public companies to report on the acquired own shares. This law proscribes an obligation of (1) the disclosure of information on own shares in the Annual management report, (2) public disclosure of the number of own shares in absolute and relative terms not later than four days after the acquisition or the disposal of shares.

Specifically, Article 50 of the Law imposes an obligation on public companies to draw up an Annual management report and determines the content of the Annual management report. What is more, it imposes an obligation of disclosure of information about the acquisition of own shares, in case the company acquired own shares during the fiscal year. The company

is also required to fill its Annual management report with the information concerning (1) the reasons for the acquisition, (2) the number and par value of own shares or the book value of shares without par value, (3) the names of persons from whom the shares were acquired, (4) an indication of the amount that the company paid with respect to acquisition or an indication that they were acquired without compensation, and (5) the total number of own shares that the company holds.

Therefore, just like the Law on Accounting and contrary to the provisions of the Companies law, the Law on the Capital Market imposes an obligation of reporting on acquired own shares in the Annual management report. Just like the Companies law, the Law on the Capital Market explicitly states which information regarding own shares acquired the company is obliged to disclose. Both laws proscribe an obligation of disclosure of reasons for the acquisition of own shares, the number and par value of own shares or book value of shares without par value, an indication of the amount that the company paid with respect to such acquisition or an indication that they were acquired without compensation and the total number of own shares the company holds. However, unlike the Companies law, the Law on the Capital Market does not require companies to state the type and the class of own shares acquired, neither their share in the share capital of the company. A serious flaw of this law is reflected in the failure to proscribe the obligation of reporting on own shares disposed and cancelled, and, accordingly, on the price at which acquired shares were disposed. However, the provisions of the Companies law apply to the public companies too, so that the public companies are obliged to disclose this information in the Annual management report, even though this obligation is not proscribed by Law on the Capital Market.

It turns out that the only novelty for the public companies, in terms of the content of the Annual management report, relates to their obligation to disclose the names of persons from whom the shares were acquired. Public companies, however, have the obligation to draw up Semi-annual management reports (according to the rules applicable to the Annual management report), whereas public companies whose securities are traded on the regulated market have the obligation to draw up quarterly reports too (Article 5 of the Rulebook on the content, form and manner of publication of annual, semi-annual and quarterly reports of public companies, "Official Gazette" No. 14/2012). Public companies have the obligation to publish the Annual and Semi-annual report on their websites (Article 6 of the Rulebook), while public companies whose securities are traded on the regulated market shall publish quarterly reports too on their websites.

Despite its shortcomings, it must be noted that the Law on the capital markets significantly improved the issue of reporting on own shares in relation to the Law on the market of securities and other financial instruments ("Official Gazette of RS", No. 47/06) which did not regulate this area and whose provisions were applied until this law came into force.

Certain information related to the acquisition and the disposal of own shares of public companies are disclosed on the website of the Belgrade Stock Exchange. Article 63 of the Law on the capital market requires public companies to disclose information on the acquisition or the disposal of own voting shares (independently or through a person acting

on his/her own behalf and for the account of a public company) as soon as possible and not later than four days after the acquisition or the disposal. In that case, the company is obliged to disclose the number of own shares in absolute and relative terms. The report (notification) on the acquisition, the report (notification) about the cancellation of own shares, or the report (notification) on the disposal is published on the website of the Belgrade Stock Exchange. One can hereby have a serious objection that the legislator did not proscribe the obligation of disclosing the reasons for acquiring own shares or the price at which the shares were acquired.

This issue is regulated by the Listing Rulebook (04/2 No. 3163-1/12) and the Belgrade Stock Exchange Rules (No. 04/2-1521-2/13). Specifically, the companies whose securities are listed on the regulated market are required to submit to the Stock Exchange the report on the held meeting of the issuer's authority at which the decisions on the acquisition and the disposal of own shares were made, as well as the decisions taken on the first day after adoption (Paragraph 2, Article 33 of the Listing Rulebook). The stock exchange is obliged to publish these decisions on the website of the Stock Exchange within three days. Companies whose securities are included in the Open Market are required to submit notification to the Belgrade Stock Exchange on the acquisition and the disposal of own shares (Article 67 of the Belgrade Stock Exchange Rules), which the Stock Exchange shall publish on its website pursuant to Article 218. With respect to own shares, flaws of the Listing Rulebook and the Belgrade Stock Exchange Rules are reflected in the fact that they do not require the disclosure of the reasons for acquiring own shares. Consequently, the reasons for the acquisition of own shares are in most cases not disclosed. The performed analysis has shown that the majority of reasons are reflected in the acquisition of own shares from dissenting shareholders and prevention of harm to the company. What is more, it is never subsequently disclosed whether the purchase of own shares actually prevented greater damage to the company.

Reporting on own shares of the companies in Serbia

As shown, until recently the Serbian legislation has not explicitly mandated the obligation of reporting on own shares. The Law on the capital market ("Official Gazette", no. 31/2011) came into force on 17 May 2011 and started being applied from 17 November 2011. The Companies law ("Official Gazette" No. 36/3011 and 99/2011) came into force on 4 June 2011 and started being applied from 1 February 2012, while the Law on accounting ("Official Gazette" no. 62/2013) entered into force on 24 July 2013 (the implementation of some provisions has been delayed, which does not relate to the provisions concerning the disclosure of information on own shares). The analysis has included all companies whose securities are traded on the Belgrade Stock Exchange and which acquired shares during 2012. Since the Companies law has been applied from February 2012, analysis of the adequacy of reporting on own shares has not been performed for the previous period.

During 2012, 43 companies (16 from the agrarian sector) and one bank acquired own shares. Out of this number, four companies (two from the agrarian sector) excluded their securities from the Stock Exchange (financial statements for 2012 were not published),

while two companies did not disclose financial statements (one from the agrarian sector). One company disclosed financial statements, but not the Management report. Three companies (one from the agrarian sector) issued a public call for the acquisition of own shares, but the purchase did not happen in 2012.

Of the total number of companies that acquired own shares in 2012, only 9 companies (21%), in accordance with the provisions of the Companies law and the Law on the capital market, published the reason for the acquisition (5from the agrarian sector), while only two companies from the agrarian sector (4.65%), in accordance with the Law on the capital market, disclosed the names of persons from whom the shares were acquired.

Of the total number of companies that disclosed the reason for the acquisition of own shares, nine companies disclosed this information in accordance with the Law on the capital market in the Annual management report. In addition, two companies did that both in the Annual management report and the Notes to the financial statements (both from the agrarian sector), while five companies disclosed this information only in the Annual management report and two companies only in the Notes to the financial statements. Other companies reported on the legal basis of the acquisition instead of reporting on the reason for the acquisition of own shares. Specifically, reference to the number of the Assembly's decision on the acquisition of owns shares represent the legal basis, and not the reason for the acquisition.

It is important to point out that some companies, contrary to the Law on accounting and the Law on the capital market does not publish Annual management report, disclosing information to be presented in this report in the Notes to the financial statements. In fact, some companies associate the term "annual report" with the set of financial reports, audit report, management report and the statements of the persons responsible for the preparation of the annual management report, in accordance with the provisions of the Law on the capital market, whereas others associate this term with the Annual management report. This phenomenon was undoubtedly caused by the legislator. Specifically, the Law on the capital market imposes an obligation on public companies to disclose the "Annual report" (Article 50), whose integral part is the Annual management report. In another segment of the same law (in Article26), the Annual management report appears under a different name. The Law on companies refers to the Annual report in terms of the Law on the capital market as the "Annual management report" (Articles 367, 369), whereas the Law on accounting recognizes only the Management report that accompanies the financial statements, but not the Annual report in the sense of the Law on the capital market.

Six companies indicated that they acquired shares from dissenting shareholders, two companies stated that they did so to prevent the occurrence of significant damage to the company, one company acquired shares from dissenting shareholders and in order to prevent harm to the company, while one company stated that the shares were acquired without any compensation. All companies from the agrarian sector stated that they acquired shares from dissenting shareholders.

Lack of understanding of the proscribed obligation to report on own shares can be illustrated

by the example of a company from the agrarian sector that stated in the Management report that it did not acquire own shares in terms of the Companies law. However, in this way, Article 284 of the Companies law, which provides for exceptions to the acquisition of own shares, excludes the application of the provisions of Paragraphs 2 to 5 of Article 282, but not of Article 289 that proscribes the obligation to report on own shares.

The analysis indicates that the companies' reports disclose the number of acquired shares, their par value, share in the company's share capital and the total amount that the company paid for them. However, this information is often not disclosed in the Annual management report, according to the Companies law and the Law on the capital market, but in the Notes to the financial statements.

The analysis indicates that companies adequately disclose information regarding cancellation of own shares. This was certainly caused by the provisions relating to the protection of creditors due to the reduction of share capital, and concerning the reduction of capital by cancellation of own shares (Article 320 of the Companies law).

The analysis indicates that companies typically do not disclose the reasons for the acquisition of own shares in the public call for the acquisition of own shares. Non-stipulation of explicit statutory obligations of disclosure of the reasons for the acquisition of own shares in the public call for the acquisition can be regarded as a failure of the legislator.

Companies that issued a public call for the acquisition of own shares and failed to purchase in the same fiscal year did not disclose in the Managements reports that they started the process of acquiring own shares. The lack of legal obligation of reporting on the same can be considered a failure of the legislator.

Conclusion

It may be noted that the new Companies law, the Law on accounting and the Law on the capital market stand for a significant improvement in relation to previous laws that regulated the issue of acquiring and reporting on own shares. By passing these laws, the legislator for the first time recognized the need to report on own shares, so that the Companies law and the Law on the capital market explicitly proscribe an obligation to report on the reasons for the acquisition of own shares. However, as shown in this paper, provisions of the laws that regulate reporting on own shares have not been harmonized.

Despite the legal obligation, the performed analysis indicates that only 21% of companies that acquired own shares during 2012 disclosed the reason for the acquisition of own shares, while only 5% of companies disclosed the names of persons from whom shares were acquired, pursuant to the provisions of the Law on the capital market. Companies generally disclose if the shares are acquired from dissenting shareholders and if the shares are acquired in order to prevent greater harm to the company. Disclosure of the purchase of own shares from dissenting shareholders can be interpreted as the obligation of reporting on a significant event, while the reason for the disclosure of another reason may be looked for in the wrong interpretation of Article 282 of the Companies law. Specifically, this

Article imposes an obligation on the board of directors of a public joint stock company, i.e. the supervisory board if the management of the company is bicameral, to inform the shareholders about the reasons and manner of the acquisition of own shares, but only if the shares were acquired in order to prevent serious and immediate harm to the company. However, as shown, the above-mentioned Article proscribes the obligation of reporting to the shareholders assembly only if the shares were acquired in order to prevent serious and immediate harm to the company, and does not concern the obligation of reporting on the reasons for the acquisition of own shares in the Annual management report, which is explicitly required by Article 289 of the Companies law and Article 50 of the Law on the capital market.

With respect to the companies from the agrarian sector, out of the twelve companies that acquired own shares during 2012, five companies (42%) disclosed the reason for the acquisition. Out of this number, four companies (33%) disclosed the reason for acquiring in the Management report, two of which disclosed this information in the Notes to the financial statements too, and one of which disclosed the reason for the acquisition in the Notes to the financial statements only. Despite the more frequent reporting on the reasons for the acquisition of own shares of the companies from the agrarian sector compared to the companies from other industries, it cannot be concluded that companies from this sector more adequately reported on own shares, since all companies from the agrarian sector that disclosed the reason for the acquisition of own shares indicated that they purchased shares from dissenting shareholders. More definite conclusions could be drawn only if the reasons for the acquisition of own shares of the companies that did not disclose that information were known.

Non-stipulation of explicit statutory obligation of disclosing the reasons for the acquisition of own shares in the public call for the acquisition, disclosing that the company issued a public call for the acquisition and stating the reasons for acquiring own shares in the Annual management report can be considered a failure of the legislator. In the case of the acquisition of shares motivated by preventing greater harm to the company, a significant omission may be reflected in non-stipulation of the obligation of disclosure in the Annual management report whether the acquisition of own shares actually prevented the emergence of greater harm to the company, or the purchase of shares did not stop the decline in the value of shares since the purchase of shares was performed at the expense of persistent shareholders.

Literature

1. Albouy, M., Morris, T. (2006):*Les rachats d'actions au Canada: motivations et impact de l'activité économique*, Finance Contrôle Stratégie, vol. 9(4), pp. 5-32.
2. Bartov, E. (1991): *Open-Market Stock Repurchases as Signals for Earnings and Risk Changes***,** Journal of Accounting & Economics, vol. 14(3), pp. 275-294.
3. Comment, R., Jarrell, G.A. (1991): *The Relative Signaling Power of Dutch-Auction and Fixed-Price Self-Tender Offers and Open-Market Share Repurchases*, Journal of Finance, vol. 46(4), pp. 1243-1271.

4. Cvijanović, J., Adžić, S., Lazić, J. (2010): *Upravni odbori: Da li loša praksa potiskuje dobru teoriju*, Industrija, Vol. 38, No. 4, pp. 1-7.
5. Dann, L. Y. (1981): *Common Stock Repurchases: An Analysis of Returns to Bondholders and Stockholders*, Journal of Financial Economics, vol. 9, pp. 113-138.
6. Dittmar, A. K. (2000): *Why do Firms repurchase Stock*, Journal of Business, vol. 73(3), pp. 331-355.
7. Grullon, G., Michaely, R. (2004): *The information content of share repurchase programs*, The Journal of Finance, vol. 59(2),pp. 651-680
8. Henry, D., (2004): *Why the flurry of buy backs?,* Business Week, issue 29th November.
9. Ikenberry, D., Lakonishok, J., Vermaelen, T. (1995): *Market Under-reaction to Open Market Share Repurchases,* Journal of Financial Economics, vol. 39(2-3), pp. 181-208.
10. International Finance Corporation (2008): Korporativno upravljanje – priručnik (dopunjeno izdanje), IFC, Beograd.
11. Li, K., McNally, W. (2000): *Information Signaling or Agency Conflicts: What Explains Canadian Open Market Share Repurchases?,* Working paper, University of British Columbia.
12. Liano, K., Huang, G., Manakyan, H. (2003): *Market Reaction to Open Market Stock Repurchases and Industry Affiliation*, Quarterly Journal of Business & Economics, vol. 42(1-2), pp. 97-120.
13. Ljumović, I. (2009): *Prelazak rizika u neizvesnost u uslovima globalne krize*, Zbornik matice srpske za društvene nauke, br. 129, pp. 61-72.
14. Mitrović, M. (2009): *Obama: "Neće biti ni lako ni brzo",*Biznis I finansije, br. 52, februar 2009.
15. Parać, Z. (2009): *Stjecanje I raspolaganje vlastitim dionicama I nacelo jednakog polozaja dionicara*, Zbornik, 47. Susreta pravnika, Opatija, Hrvatska, str. 109-128.
16. Pavlović, V. (2010): *Otkupljivanje sopstvenih akcija - ciljevi, metodiiefekti,* Računovodstvo, vol. 53(3/4), SRRS, Beograd, str. 63-79.
17. Pavlović, V., Muminović, S. (2011): *Međuzavisnost berzanske vrednosti akcija, motiva I obima otkupa sopstvenih akcija*, Ekonomika poljoprivrede, vol. 58(2), str. 265-280.
18. Pavlović, V., Muminović, S., Grbić, V. (2011): *Efekti otkupa sopstvenih akcija na berzansku vrednost I finansijski položaj mlekara u Srbiji*, Ekonomika poljoprivrede, 58(4), str. 577-594.
19. Stevanović, S., Đorović, M., Milanović, M. (2010): *Svetska finansijska kriza I njene posledice na privredu Srbije*, Ekonomika poljoprivrede, vol. 57(3), pp. 353-368.
20. Todorović, M. (2008): Čemu *služe otkupi (sopstvenih) akcija?*, Ekonomika preduzeća, SES Beograd, vol. 56, br. 7-8, pp. 249-262.
21. Vermaelen, T. (1981): *Common Stock Repurchases and Market Signaling: An Empirical Study*, Journal of Financial Economics, vol. 9(2), pp. 139-183.
22. Weston, J.F., Siu, J.A. (2003): *Changing Motives for Share Repurchases*, Working paper, University of California.

Legislation:

1. Directive 2012/30/CE du Parlement Européen et du Conseil.
2. Directive 2013/34/CE du Parlement Européen et du Conseil.
3. Mišljenje Komisije za hartije od vrednosti broj: 3/0-04-617/8-05, od 19.01.2006.
4. Mišljenje Komisije za hartije od vrednosti broj: 2/0-03-117/2-12, od 07.05.2012.
5. Pravilnik o sadržini, formi I načinu objavljivanja godišnjih, polugodišnjih I kvartalnih izveštaja javnih društava, Sl. glasnik RS, br. 14/2012.
6. Pravilnik o listingu (br. 04/2 3163-1/12).
7. Pravilnik o poslovanju Beogradske berze (br. 04/2-1521-2/13).
8. Zakon o privrednim društvima, Sl. Glasnik RS, br.125/2004.
9. Zakon o privrednim društvima, Sl. Glasnik RS, br.36/3011 i 99/2011.
10. Zakon o računovodstvu I reviziji, Sl. Glasnik, br.46/2006, 6/2006, 111/2009 i 99/2011.
11. Zakon o tržištu hartija od vrednosti I drugih finansijskih instrumenata, Službeni glasnik RS, br. 47/06.
12. Zakon o računovodstvu, Sl. Glasnik, br. 62/2013).
13. Zakon o tržištu kapitala, Sl. Glasnik, br. 31/2011.

Websites:

1. Beogradska berza: www.belex.rs
2. Komisija za hartije od vrednosti: www.sec.gov.rs

IZVEŠTAVANJE O RAZLOZIMA STICANJA SOPSTVENIH AKCIJA

Vladan Pavlović[5], Janko Cvijanović[6], Srećko Milačić[7]

Sažetak

Saznanje da je kompanijasticala sopstvene akcije samo po sebi nije uvek od velikog značaja. Informacija o sticanju sopstvenih akcija od nesaglasnih akcionara ili o prinudnom otkupu od manjinskih akcionara nije korisnicima finansijskih izveštaja od velikog značaja. U prvom slučaju je daleko značajnije obelodanjivanje značajnog događaja koji je omogućio nesaglasnim akcionarima istupanje iz društva. Međutim otkupljivanje sopstvenih akcija usled pojedinih razloga, kao što je otkupljivanje sopstvenih akcija sa premijom kako bi se uticalo na berzanski kurs akcija, sticanje sopstvenih akcija usmereno na spečavanje veće štete po društvo, što je posebno aktuelno u vreme finansijskih kriza ili otkupljivanje sopstvenih akcija kao sredstvo za povrećaj novca akcionarima je za korisnike finansijskih izveštaja od velikog značaja. Zbog toga savremena zakonodavstva razvijenih zemalja obavezuju kompanije da obelodanjuju niz informacija u vezi sopstvenih akcija, među kojima obavezno i razlog sticanja. Navedeno je predviđeno i relevantnim direktivama EU kao i domaćim zakonodavstvom. U radu se ukazuje da zakonske norme koje regulišu obevezu izveštavanja o sopstvenim akcijama u Srbiji nisu usaglašene, a da većina javnih društava u Srbiji, uprkos zakonskoj obavezi, ne obelodanjuje razlog sticanja sopstvenih akcija.

Ključne reči: *sopstvene akcije, izveštavanje, izveštaj o poslovanju, napomene uz finansijske izveštaje.*

5 Prof. dr Vladan Pavlović, redovni profesor, Univerzitet u Prištini, Ekonomski fakultet (Kosovska Mitrovica), Kolašinska 156, Kosovska Mitrovica, Telefon: +381 28 497 934, E-mail: vladan.pavlovic@pr.ac.rs

6 Prof. dr Janko Cvijanovic, naučni savetnik, Ekonomski institut, Kralja Milana 16, Beograd 11000, Telefon: +381 11 361 31 17, E-mail: jankocvi@eunet.rs

7 Prof. dr Srećko Milačić, redovni profesor, Univerzitet u Prištini, Ekonomski fakultet (Kosovska Mitrovica), Kolašinska 156, Kosovska Mitrovica, Telefon: +381 28 497 934, E-mail: srecko.milacic@pr.ac.rs

Review Article

Economics of Agriculture 3/2014
UDC: 349.415:631.95

LEGAL PROTECTION OF LAND FROM POLLUTION

Zdravko Petrović[1], Dragan Manojlović[2], Vojislav Jović[3]

Abstract

Situated in the study conducted in this paper, using the method of analysis of contents, induction and deduction, historical and legal dogmatic indicated that ecology as their object of legal protection has three global natural values: air, water, land, and atmosphere, hydrosphere and lithosphere as constituent elements of the biosphere. Land as a special natural product comprises a solid layer of the Earth that is specific to the biosphere. The importance of land from the perspective of sustainable development is multifaceted, especially when seen through its environmental, industrial, manufacturing, socio-economic, educational, scientific, cultural, historical and any other useful functions. Its most important function is to fertility and the ability to flora supplying water, oxygen and mineral substances. Natural processes that led to the creation of land argue the view that it belongs to the so-called renewable resources, but only if it's a man rational use and encourages their natural reproduction. In accordance with current legislation and categorization of land, this survey includes agricultural land. In this paper, we have opted for ecological and legal land protection as one of the most important natural resources whose quality and extent of a very significant impact on the environment as a whole. The introductory part of the paper included a terminological demarcation and specificity of the case study of environmental law, as well as the possible forms of soil pollution. Methodological framework of research, using the method of content analysis of existing domestic and international legal legislation, method comparison and synthesis were studied legal documents that protect the land from pollution.

Key words: *environmental law, environment, land, legal protection, national and supranational regulations.*

JEL: *K 32, M 24*

1 Zdravko Petrović, Ph.D., Full professor, Faculty of Law, Public Administration and Security, Bulevar umetnosti Street no. 29, 11070 Novi Beograd, Serbia, Phone: +381 63 575 880, E-mail: zpetrovic@megatrend.edu.rs

2 Dragan Manojlovic, Ph.D., Associate Professor, Faculty of Law, Public Administration and Security, Bulevar umetnosti Street no. 29, 11070 Novi Beograd, Serbia, Phone: +381 64 322 19 26, E-mail: dmanojlovic@megatrend.edu.rs

3 Vojislav Jović, Ph. D., Assistant Professor, Faculty of Law, Public Administration and Security, Bulevar umetnosti Street no. 29, 11070 Novi Beograd, Serbia, Phone: +381 63 133 39 99, E-mail: vjovic@megatrend.edu.rs

Introduction

Modern legal theory, since the second half of the last century, has introduced in the legal framework the 'ecology - living environment' as object of legal protection and its *ratio legis* is to 'regulate the behaviour of man in nature'. Terminological and essential dilemma regarding the question what is the object of legal protection here: ecology - *ekos* or living - *environmental,* tried to clarify the German biologist Ernest Hekel (Odum, Barrett, 2005) in his work 'History of nature' which was published in 1866, by interpretation that ecology is a broader term than the living environment, i.e. that ecology (Odum, Barrett, 2005) includes the wholeness of perpetual interaction of living and non-living on the planet, while on the other hand, the living environment implies spatially defined environment and does not deal with the totality of mutual relations of the living and non-living. Healthy ecology, i.e. healthy living environment is the most of international community on the whole and as such, enters the system of human rights which are proclaimed within the Universal Declaration on human rights as 'the third generation rights', the so-called 'solidary rights', i.e. rights to healthy living environment. The imperative and prohibiting legal provisions determine the legal framework of human behaviour, i.e. legal basis for application of sanction, and all this is contained within new branch of law - the environmental law. Environmental law as specific legal branch is dynamic and complex legal area, which is characterized by its multi-disciplinary nature, complexity of subjects of research and methods and principles coverage. Although it is an independent branch of law, the environmental law contains elements of other branches of law, especially administrative law, international public law and criminal law, although its *diferentia specifica* is environmental-legal relation as subject of environmental law which includes very important ecological values such as: right to live in healthy environment, right to sustainable economic development, rational use of natural resources, protection of integrity of biosphere, protection from all forms of environmental pollution, availability of information on the status of living environment and participation in decision-making regarding important ecology issues, adequate education and increasing awareness in the sphere of protection of living environment, international cooperation ... and correlation of all laws is the duty of every individual to protect the living environment (Lilić, Drenovak, 2010).

Ecology has, as its object of legal protection, three global natural values: air, water and land, i.e. atmosphere, hydrosphere and lithosphere as integral elements of biosphere (Jacqueline, 2005). Land, as special natural creation, is comprised of rigid superficial layer of the Earth which is specific to biosphere. By the way, soil is created as a result of interactive action of climatic and other endogenous and exogenous factors and living organisms on the geological base of the Earth, of which animals, herbal and microorganisms have very important role. Importance of soil from the point of view of sustainable development (Kramer, 2012) is multifold, especially if it is observed through its ecological, industrial, production, social-economic, instructional-educational, scientific-research, cultural-historic and all other generally useful functions. The most important function of it is fertility, i.e. ability to supply water, oxygen and mineral substances to flora[4]. Natural processes that led to creation of soil

4 http://www.scribd.com/doc/180847538/Zagađivanje-zemljišta-pptx

substantiate the point of view which is ranked in so-called recyclable resources, but only if man uses it rationally and incites its natural reproduction. In keeping with valid legal regulations and land categorization, this research will include agricultural and building land, i.e. mining and geological research.

Types of Land Pollution

It is general opinion that antropogenous factors are primary in the process of land degradation i.e. in reduction of its total area. Spreading of residential areas, construction of industrial complexes and traffic routes, depositing waste, irregular irrigation and other activities that man performs on the land, have permanent influence on its degradation and pollution. Non-implementation of measures for protection of land from the influence of natural factors such as water, wind and sun heat, leads to frequent processes of erosion, especially in areas which are not covered or are partly covered with vegetation (Kiss, Shelton, 2007). Most frequent forms of land pollution refer especially to: 1) appearance of great concentration of poisonous materials; 2) creating barren soil as the result of exploitation, processing or use of mineral raw materials or industrial plants; 3) important increase of concentration of certain elements such as phosphates and nitrates; 4) concentration of toxic and other elements from industrial waste waters; 5) urbanization and industrialization of agricultural land; 6) onset of pathogenous organisms, viruses and bacteria which come from fecal water; 7) onset of radioactive and other particles of organic and inorganic origin which come from subterranean waters (McIntyre, 2007) or atmospheric precipitations. Each of the afore-mentioned forms contribute, more or less, to degradation of land as natural resource which is hard to regenerate, the degradation of which has direct influence on the condition of living environment on the whole. Degradation of land is possible under influence of natural factors (water and wind erosion) and antropogenous factors which change and impair physical, chemical and biological (O'Neill et al., 1986) properties in land profile itself. Legal protection of land by the rule includes application of administrative-legal and criminal-legal measures harmonized with international legal standards.

Protection of Land from Pollution National Legislature

Protection of land from pollution is regulated by international legal acts and national legislature. Within national legislature (Hamidović, 2012) this area is regulated by systemic laws and in principle, by provisions of the Living environment protection Act (Environment protection Act - RS Official Gazette, no. 135/2004, 36/2009 - et al. 72/2009 - other laws and 42/2011 - decision of US) and in detail by the Agricultural land Act (Agricultural land Act - RS Official Gazette, no. 62/2006, 65/2008 - other laws and 41/2009), by Mining and geological research Act (Mining and geological research Act - RS Official Gazette, no. 88/2011) and certain bylaws. Land protection under terms of these Acts includes a set of physical, chemical, technical and biotechnical measures and procedures for securing all its functions:

1) Provisions of the *Law on protection of living environment* stipulate protection of soil and land, which as part of integrated protection of natural values is protected by measures of

systematic monitoring of land quality, monitoring indicators for assessment of risk from land degradation and by conducting remedial programme for removing consequences of contamination and degradation of land space, no matter if they happen naturally or as a result of human activity. General provisions stipulate duty of the subject whose right of use of land terminated due to change of holder of that right, and whose activity influenced, or could influence or hinder natural functions of land, to make a report regarding land condition. Programme of systematic monitoring of land quality, indicators for evaluation of risk from land degradation and methodology for making remedial programmes are stipulated by Government Decree (RS Official Gazette, no. 88/2010) and competent Minister prescribes the content and methodology of making a report regarding land condition. According to the Decree, the programme of systematic monitoring of land quality includes: 1) number and layout of localities, position of monitoring spots shown by Gauss – Kruger coordinates; 2) list of parameters to be gathered in spots of land sampling; 3) list of methods and standards which are used for land sampling, analyses of samples, processing and presentation of data; 4) determining expert accredited institutions to perform systematic monitoring of land quality.

Programme of systematic monitoring of land quality includes establishing state and local network of localities for monitoring land quality, of which state network refers to monitoring land quality on the level of the Republic of Serbia on localities on which land pollution occurred or might have occurred, and which are of special interest to the Republic of Serbia, while local network is established for monitoring land quality on the level of autonomous province and unit of local self-government. On selection of parameters in places of land sampling, those parameters the values of which can cause significant risk to human health and living environment are taken into consideration. Time schedule of land sampling, sample analysis, processing and presentation of data depends on reliability of analyzed parameters, their forms and concentrations in living environment, and for those reasons parameters with annual, three annual and five annual schedule of measuring are determined. All data obtained by implementation of programme of systematic monitoring of land quality are submitted to the Agency for environment protection until 31st March in current year for previous year and are used for evaluation of land quality and for making a report on land condition and they are integral part of information system of environment protection. Agricultural land includes land used for agricultural production (crop fields, gardens, orchards, vineyards, pastures, meadows, ponds, swamps and marshes) and land that can be brought for the purpose of agricultural production. According to the Census of Agriculture 2012th, in the Republic of Serbia has 631,122 farms, as follows: 2,567 households entrepreneurs and legal persons (99.6 % of the total number of farms) and 628 555 family farms. The total agricultural land use in the territory of the Republic of Serbia is 3,355,859 ha. The average family household uses 4.5 hectares of agricultural land, has a two-axle tractor and harbors: one head of cattle, four pigs, three sheep, 26 head of poultry and one colony. However, most of them are farms that used 2 ha of agricultural land. According to the "Statistical Yearbook of the Republic of Serbia in 2012", the total agricultural area in the 2011th year, fields and gardens accounted for 64.6 %, with 4.7% of orchards, vineyards, from 1.1 % to 12.2% meadows and pastures 16.6%. The structure of

sown areas of arable land and wheat accounted for 58.0 %, industrial crops with 13.0%, Vegetables with 8.3% roughage with 13.8 % (based on the research library of the National Assembly on the topic: Ownership structure of agricultural land, 19 04 3013. pcs. Z-05/13).

Indicators for evaluation of risk from land degradation prescribed by the Decree are: 1) degree of endangerment of land from erosion; 2) degree of endangerment of land from loss or organic materials; 3) degree of endangerment of land with risk from land compaction; 4) degree of endangerment of land from salination and/or alkalization; 5) degree of endangerment of land from slides, except slides which can be created by mining activities for the duration of activities; 6) degree of endangerment of land from acidification; 7) degree of endangerment of land from chemical pollution. Said indicators are evaluated on the basis of general elements for evaluation of risk from degradation of land which include: 1) elements for identification of area with risk from erosion; 2) elements for identification of area with risk from loss of organic material from soil; 3) elements for identification of area with risk from compaction; 4) elements for identification of area with risk from salination and/or alkalization; 5) elements for identification of area with risk from slides; 6) elements for identification of area with risk from acidification.

Methodology of making remedial programmes contains: 1) type of location, quantities and concentrations of hazardous materials; 2) determining status of endangering of living environment; 3) type, load and migration of pollution in the course of time, existing and possible influences on the living environment; 4) measures which will be implemented and evidence of their purposefulness; 5) internal control measures which provide proper performance and efficiency of planned measures; 6) internal control measures which include programme of monitoring in order to monitor the course of remedying i.e. reduction of risk for human health and living environment; 7) schedule of implementation and costs of remedying. In the aim of making remedial programmes, contaminated locations are determined which include areas on which degrading or destructive processes occurred, namely: 1) waste disposal; 2) locations of business entities-operators i.e. locations the pollution of which are caused by active or inactive installations or operators in whose environment hazardous materials are disposed; 3) accident locations i.e. locations polluted due to extraordinary events, including breakdowns; 4) industrially devastated locations (*brownfield* locations) on which activities which could have contaminate land were performed. Inventory of contaminated locations presents integral part of information system of protection of living environment which is kept by the Agency for environment protection.

Surveillance over application of this Act and regulations made in keeping with the law is performed by competent ministry as part of inspective surveillance through inspector for protection of environment. In performing the inspective surveillance, inspector is authorized to: forbid discharge of polluting and hazardous materials, waste waters or energy into the air, water or land in the manner and in quantities i.e. concentration or levels above prescribed ones and to take samples of land, water, waste, air through authorized organization. Violation of legislative provisions and regulations passed on the basis of the laws is incriminated in the form of commercial offences and torts, for which a fee is

prescribed for legal entity and responsible person/physical person, which is imposed in proportion with the level of damage made, non-performed obligation or value of goods or other thing which is the subject of commercial offence, up to 20 fold amount of damage done, non-performed obligation or value of goods or other thing which is the subject of commercial offence, and also a protective measure of prohibiting performance of certain business activity in duration of up to 3 years and to responsible person, performance of certain activities in duration of up to 1 year can also be imposed;

2) Provisions of the Agricultural land Act stipulate that planning, protection, development and use of agricultural land and measures of surveillance over application of the law. Protection of agricultural land is performed on the basis of planning documents i.e. as part of accepted agricultural basis that the Government adopts for the territory of the Republic and for the territory of autonomous province in keeping with spatial and urban plans. Basic principles which apply in the sphere of protection of agricultural land pertain to: a) purposeful use of agricultural land, in such manner that agricultural land is used for agricultural production, and for other purposes only when permitted by the laws; b) prohibition to discharge and dispose hazardous and noxious materials on agricultural land, drainage and irrigation channels and prohibition of use of non-degradable foils on arable agricultural land; determining existence of hazardous and noxious materials in agricultural land and water for irrigation, on the basis of examination, according to programme adopted by competent minister who will, in case of determination of existence of hazardous materials in un-allowed quantities, Regulations on permitted amounts of hazardous and noxious substances in soil and water for irrigation and methods for their examination, provided their maximum level that can damage or change in productive capacity (fertility) of agricultural land and water quality for irrigation, the discharge coming from the factory, overflowing landfills or improper use of fertilizers and plant protection products. Catalog of hazardous and harmful substances regulated by this Ordinance include: cadmium, lead, mercury, arsenic, chromium, nickel and fluorine, as dangerous, and copper, zinc and boron, as well as harmful substances, and the plant protection products which are used for suppression weed-based triazine preparations: atrazine and simazine (Official Gazette of RS, no. 23/1994) forbid or restrict production of agricultural cultures on that land, as well as use of water for irrigation; c) undertaking anti-erosion measures which imply: temporary or permanent prohibition of ploughing meadows, pastures and other surfaces in the aim of converting them into arable fields with one-year crops; introduction changing of crops; growing long-term plantings; building specific civil engineering structures; adequate method of treatment of agricultural land; erection and keeping of crop-protection strips including planting long-term woody plants; prohibition of pasture for certain period of time or limiting the number of heads of cattle that can be released on certain areas of land; prohibition of deforestation or cutting forest plantings above endangered plots; and undertaking other measures in order to prevent agricultural land erosion; d) control of fertility of arable agricultural land and quantities of mineral fertilizers and pesticides entered into arable agricultural land, which is performed by the rule once in 5 years or sooner if necessary, all in the aim of protection and preservation of chemical and biological properties of agricultural land from 1st to 5th cadastral class. Cadastral land is

determined by culture and class of each parcel of arable land is carried out by municipalities, based on the natural and economic conditions of production and established the basics of land classification. According to the use plots of fertile land are classified in one of the following eight cultures: 1) field, 2) garden 3) orchard, 4) vineyard, 5) meadow, 6) pasture, 7) forest, 8) reed marshes, all the Rules of cadastral land (Official Gazette of RS, no. 37/94 and 49/94) and securing proper use of mineral and organic fertilizers and pesticides; e) prohibition of use of arable agricultural land in non-agricultural purposes, and especially arable agricultural land from 1st to 5th cadastral class, except in special cases when it is used for making artificial meadows, pastures and forests, then for exploitation of mineral raw materials (clay, gravel, sand, peat, stone) i.e. for carrying out works on disposal of slag, ashes, cinder and other hazardous materials and in other cases in which general interest has been determined; f) inability of chopping up cadastral plots of arable agricultural land into plots the area of which is less than half a hectare i.e. plots the area of which is less than one hectare of arable agricultural land as regulated by redistribution of land; g) field damage which implies prohibition of destroying or damaging crops, plantings, trees and agricultural mechanization on estates and other damages which lead to reduction of productivity of agricultural land and prohibition of burning organic remains after harvest or cattle grazing; h) protect agricultural land from frost, ice, fire and other elements, which implies obligation of the unit of local self-government to prescribe measures for protection of said factors.

Bylaws which prescribe in detail the protection of agricultural land from pollution are passed by competent minister, and surveillance over implementation of legislature and bylaws is conducted by competent ministry as part of inspective surveillance through the agricultural inspector of Republic Serbia. The inspector is authorized, among other things, to forbid discharge and disposal of hazardous and noxious materials on agricultural land and channels for irrigation in quantities which can damage and reduce production ability of agricultural land and quality of water for irrigation; to prohibit use of arable agricultural land from 1st to 5th cadastral class for non-agricultural purposes; to prohibit exploitation of mineral raw materials i.e. disposal of slag, ash, cinder and other hazardous and noxious materials on agricultural land. For violation of provisions of this Act and regulations passed in keeping with the laws, incrimination is determined in the form of tort for which a fine is imposed for business enterprise, company or other legal entity i.e. responsible person within business enterprise, company or other legal entity, as well as to the owner or user of agricultural land - physical person.

3) Provisions of Mining and geologic research Act stipulate measures and activities of mineral policy and method of its implementation, terms and method of carrying out geologic research of and other geologic resources (*Geological resources* include: space with its geological, ambiental and other characteristics, mineral resources, resources of ground waters and geothermal resources) research of geologic environment as well as geologic research for spatial and urban planning, designing, constructing buildings and land reclamation, method of classification of resources and reserves of mineral raw materials (*Geologica environment* is part of Earth crust which is consisted of: land with aeration zones and mineral feeding of plants, rocks, superficial and ground waters, mineral and other

resources) and groundwater, exploitation of reserves of mineral (*Mineral raw materials* are concentrations of mineral materials of organic and inorganic origin, which at certain level of development of equipment and technology, may be used economically, either in natural condition or after proper processing) raw materials and geothermal resources (*Geothermal resources* represent a set of recyclable geological resources that include ground waters and heat of rock missives from which it is possible to separate heat energy) building, use and maintenance of mining facilities, plants, machines and equipment, execution of mining works, managing mining waste, procedures of reclamation and re-cultivation of deserted mining facilities, as well as surveillance of enforcement of this law. From point of view of endangering land within this law, the following fields will be stressed: managing mining waste; deserted mines and mining facilities; temporary and permanent cessation of mining works; reclamation and re-cultivation; inspective surveillance and punitive policy.

Managing mining waste as potential polluter of land is performed on the basis of license for managing waste which is issued in keeping with the waste management plan and other documentation which defines category, management and reporting on mining waste. Criteria, procedure and method of making disposal, management and classification of mining waste, as well as reporting on mining waste, are determined by the Government.

Abandoned mines and mining facilities and procedures of their reclamation and re-cultivation is performed on the basis of: case study of as-found condition, mining works and facilities, as well as condition of resources and reserves of mineral raw materials and other geology resources; projects of engineering-geologic and mining research for determining technical-technological basis for making projects of reclamation and re-cultivation; project of reclamation and re-cultivation of abandoned mines and mining facilities; project of as-executed condition following completed reclamation of abandoned mines and mining facilities. Contents of case study and projects, in keeping with modern scientific achievements and rules of mining and other professions, are prescribed by competent Minister.

Permanent cessation of mining works implies the duty of exploitation-carrier (Bearer of operation is a company or other legal entity or entrepreneur where the competent authority has approved the exploitation of mineral resources and geothermal resources) to undertake all measures of protection of mining facility and land on which works were performed and measures of protection and reclamation of living environment in order to provide life and health of people and property, in all according to main mining project of permanent cessation of works. Complete mining documentation: projects, plans and sketches, survey ledgers and other documentation regarding status of mining works and status of resources and reserve of mineral raw materials at the time of cessation of works, the exploitation-carrier is obligated to hand over for safekeeping to the organ that issued approval for exploitation i.e. approval for performing mining works. This documentation is available to any business entity who is interested for restoring works on the abandoned exploitation field.

In cases of planned permanent cessation of mining works, exploitation-carrier is obligated to make a programme for mine closing, which beside other measures contains: reclamation and re-cultivation of land on which exploitation was made and resolving problems of protection of living environment created as a result of mine closing.

Reclamation and re-cultivation in the course and upon completion of works on exploitation i.e. at latest within one year from completion of works on areas on which works are completed, implies duty of exploitation-carrier to make re-cultivation of land according to re-cultivation project i.e. to undertake steps for protection of land on which works were performed and steps for protection and reclamation of living environment and waters, for safety and health of people and safety of property, all in keeping with the procedure, conditions and method of making reclamation and re-cultivation which is prescribed by competent minister. It is of importance to point out that in keeping with the principle 'the user pays', exploitation-carrier is obligated to pay certain fee for geologic research and for use of mineral raw materials and geothermal resources. Amount of fee and method of payment are determined by special document which is issued by competent minister.

4) Provision of the Chemicals Act (RS Official Gazette, no. 36/2009) among other things, stipulate integrated management of chemicals, classification, packaging and marking of chemicals, integral register of chemicals and register of chemicals which are placed on the market, limitations and restriction of production, putting on the market and use of chemicals, import-export of certain hazardous chemicals, permits for performing marketing activities and permits for use of very hazardous chemicals. This Act implicitly stipulates protection of land from pollution through protection of living environment, especially by application of principles of caution i.e. principle that producer, importer or end user produces, puts on the market or uses chemicals in the manner which has no side effects on health of people and the living environment. Important provisions of this Act pertain to the List of substances that cause concern in the register of chemicals, which are scientifically proven as causing significant consequences to health of people and living environment (Chemicals Agency issued je 2011. The list of substances of concern, which according to the classifications and properties classified as category: highly-persistent very bio-accumulative-vPvB) as well as provisions which pertain to limitations and restriction of production, putting on the market and use of chemicals which present unacceptable risk to health of people and living environment.

Criminal law protection of living environment includes (Vrhovšek, 2007) incriminations prescribed as part of 18 criminal offences classified in unique Chapter of Penal Code. From standpoint of protection of land from pollution, its criminal-legal protection (Rakočević, 2011) is, by the rule, exercised by means of general criminal offences against living environment and criminal offences in connection with hazardous materials (Jovašević, 2011). In general criminal offences by which land is directly or indirectly polluted, are classified: 1) Pollution of living environment by which land is polluted by violation of regulations to greater or lesser extent or in broader area i.e. is left in such condition so that it represents a danger to life and health of people and survival of herbal and animal population. Performance action can be made by discharge of waste water into soil, by spilling hazardous chemicals and other substances on land, by disposing and storage of hazardous materials on the land etc. If by said

actions the soil is polluted in such extent the result of which was destruction or damaging of herbal or animal population to great extent or if pollution is of such nature that for its remedy long time or big expenses are required, the criminal offence gets a qualified form; 2) Non-performance of measures for protection of living environment, implies non-performance i.e. failure to undertake protection measures laid down by the laws or by decision of competent authority, because of which pollution of land occurred, i.e. if land is polluted in great extent or in broader area. Non-performance i.e. failure to perform protection measures makes this offence consummated, no matter if the consequence actually occurred or was manifested in the form of abstract danger; 3) illicit building and commissioning of installations that pollute living environment, represents a form of incrimination which in illicit manner, contrary to regulations is allows construction of buildings and installations, their commissioning or use or change of technology, by which land is polluted to large extent or in broad area, or resulting in destruction or damaging of herbal or animal population to great extent, i.e. if land is polluted in such extent that for its remedy long period of time or big costs are required; 4) damage of buildings and equipment for protection of living environment, implies damage, destruction, removal or otherwise rendering unusable the building or equipment for protection of living environment (egg. land decontamination equipment, containers for storage of hazardous waste, etc.), because of which land is polluted to large extent or in broad area occurred or might have occurred. Damage implies partial destruction of structures and equipment by which in certain extent is reduced their useful function, while by destruction they are left in completely unusable condition. As part of incrimination in connection with hazardous materials, land can be polluted by exercising the very being of criminal offence: by bringing hazardous materials to Serbia and prohibited processing, disposal and storage of hazardous materials, which include radioactive or other hazardous materials and hazardous waste which are illicitly brought to Serbia, or transported, processed, disposed, collected or stored, because of which pollution of living environment or land can occur or has occurred. All afore-said criminal offences (Lukić, 2012) beside its basic form, have a qualified form too, which is created if by performance action herbal or animal population is destroyed to large extend or living environment is polluted to such extent that for its remedy long period of time or big costs are required.

International legal standards

Modern concepts of international ecological protection (Ole et al., 2009) of the environment start in the second half of the last century, by passing very important international legal acts (Fitzmaurice, 2009) of which following are to be noted:

1) Declaration of UN on living environment - Stockholm Declaration which was adopted in 1972 in Stockholm. This Declaration contains 26 basic principles which, among other things, proclaim right of a human being to adequate living conditions in the environment the quality of which enables decent life and well-being, i.e. obligation that natural resources, water, air, land, flora and fauna, be protected by careful planning of protection in the aim of well-being of current and future generations.

2) Rio Declaration, prepared in UN conference on living environment and development in Rio de Janeiro, modern concepts of international environmental law Ecological start in the second half of the last century, the adoption of a very important international legal acts, among them in 1992, which contains 27 basic principles which, among other things, proclaim the right to healthy and productive life in keeping with the nature, and that human beings are in the focus of care for sustainable development, and that protection of the environment should be observed as integral part of achieving sustainable development and not separately from it. In addition to Rio declaration, on this conference were adopted other very important documents such as: Agenda 21 as global action plan of sustainable development, which includes four global areas among which is protection and management of natural resources; draft Convention of UN on climate changes (RS Official Gazette - International Agreements, no. 2/1997) which regulates among other things, for member countries in the extent in which it is possible, the establishment of system of protected areas or areas in which special measures should be applied in the aim of preserving biological diversity, enhancement of protection of ecosystem and natural habitats etc. (RS Official Gazette - International Agreements, no. 2/1997) and Convention on biological diversity, which regulates preserving biological diversities, ecosystems and natural habitats, i.e. maintaining and restoring populations and species in their natural environment.

3) Stockholm Convention on long-term organic polluting materials, prepared in Stockholm on 22 May 2001 took effect on 17th May 2004 which Serbia signed in 2002 and ratified in 2009 (RS Official Gazette, no. 36/2009). This Convention protects land from pollution in most specific manner, by recognizing the fact that long-term organic polluting substances have toxic properties, they are not easily degraded, they are bio accumulative and they are transferred through the air, water and migratory species, across international borders and then sediment far away from the place where discharged and then accumulated in land and water ecosystems. This convention promotes, as its *ratio legis* the limitation or prohibition of production, export-import, use and emission of very toxic materials classified in the category of long-lasting organic polluting substances, for protection of health of people and living environment on the whole. In Annexes A, B and C of the convention are cataloged chemicals to be eliminated, then chemicals with limited use and chemicals which were accidentally produced, the production of which should be limited or eliminated.

The convention in Annex D prescribes that member country which gives proposal for placing certain chemical on the list in Annex A, B and/or C, identifies the chemical according to certain parameters and gives information on given chemicals and products of its transformation, and when long-lasting character of chemicals is involved, evidence should be provided that the time of semi-disintegration of the chemical in water is longer than two months, or that the time of its semi-disintegration in land is longer than six months, or that time of its semi-disintegration in sediment is longer than six months, i.e. evidence that said chemical is sufficiently persistent, so that it justifies its consideration within this Convention.

4) Kyoto Protocol with the draft Convention on climate changes, prepared in conference in Kyoto on 11th December 1997(RS Official Gazette – International Agreements, no.

88/2007, 38/2009 – other laws) for the purpose of reaching goal of the Convention and all legal instruments related with it, i.e. achieving stabilization of concentration of gases with greenhouse effect in the atmosphere at the level which prevents dangerous anthropogenic influences on climatic system. The Protocol, among other things, prescribes that parties involved in Annex I of the Convention, ensure that net changes in emission of gases with greenhouse effect from sources and quantities eliminated by means of subterranean basin, which are direct consequence of anthropogenous changes in use of land and activities in forestry limited to forestation, revival of forests and deforestation in the period from 1990, measured as verified changes in deposited carbon in every obligatory period, be used as measure of fulfillment of obligations for each party involved in Annex I. In addition to this, it will be decided in sessions on modalities, rules and guidelines regarding how and which additional human activities, in connection with changes in emission of gases with greenhouse effect and elimination by means of subterranean basin in agricultural land and changes of use of land and forest categories, should be added or separated from prescribed sum for Parties involved in Annex I, taking into consideration the unknowns, transparency in reporting, possibility of checking, work on methodologies of Inter-Government panels on climate change, i.e. advice that provide Assisting organ for science and technology.

5) *Arhus Conventopm* (RS Official Gazette – International Agreements, no. 38/2009) prepared on 25th June 1998 in Arhus in 4th conference 'Living environment for Europe', the aim of which is to contribute to protection of rights of every individual of current and future generations to life in living environment which is adequate for their health and well-being. Arhus Convention does not contain specific provisions regarding protection of land from pollution, but living environment, including land, protects indirectly by means of its three pillars which include: 1) right to availability of information regarding environment; 2) right to participation in the public in making decisions concerning the environment; and 3) right to legal protection.

6) Basel Convention of control of trans-border movements of hazardous waste and their disposal (RS Official Gazette – International Agreements, no. 2/1999) the aim of which is establishing full control of movement and disposal of hazardous waste because such type of waste is dangerous to health of people and living environment, and especially for pollution of land, because it is according to its characteristics, toxic and Eco toxic, explosive, flammable, corrosive, infective. From point of view of land protection from pollution with hazardous waste, of special importance is the operation of its disposal which does not allow regeneration, recycling, processing, direct reuse or alternative use of source, especially because this method of disposal includes by Convention some of the following operations: 1) disposal in/on land (burying in land); 2) preparation of land (biodegradation of liquid waste or sludge discharged into soil); 3) deep injection (injection of waste which can be pumped into wells, salt domes or natural depositories); 4) superficial basins (placing liquid or sludgy waste into pits, ponds or lagoons); 5) specially built spaces under surface of the earth (placing in concrete cells which are covered or isolated from each other and from environment); 6) discharge in a water mass; 7) incineration on soil; 8) permanent storage (placing of containers in mine); 9) mixing before subjecting it to some of the said operations; 10) repacking before subjecting it to some of

the said operation; 11) storage, observing any of afore-said operation. In keeping with these international legal standards, the Environment protection Act forbids import of hazardous waste i.e. permit for its import, export or transit is issued by competent ministry, which prescribes conditions which must be fulfilled by professional organizations for examining waste. Waste management Act (RS Official Gazette, no. 36/2009 and 88/2010) stipulates that managing waste is conducted in the manner which ensures less risk of endangering life and health of people and living environment, among other things, by control and measures of reducing pollution of water, air and land (Čavoški, 2011).

European legislature does not contain unique criteria for defining quality of land, although importance of monitoring condition of land is stressed by implementing the 6th action programme of EU for the environment, entitled: 'Living environment 2010 our future, our choice' by which the importance of protection of land is equaled with protection of water and air. Legal standards of European Union in the field of protection of living environment are connected, by the rule, with secondary sources of law, i.e. with directives as most frequent legal sources in the field of environmental law, while in the Agreement on functioning of EU (Bjelajac et al., 2011) as primary source of law, living environment is treated within environmental action programmes as one of the four priority areas.

Conclusion

When talking about the environmental-legal protection of land or living environment in general, special attention is paid to administrative-legal and criminal protection. Administrative-legal protection is defined by systemic laws which, as form of incrimination by rule prescribe, commercial offence, protection measures and/or tort and in special cases the criminal offence too, while criminal-legal protection is stipulated by provisions of Penal Code within 18 criminal offences ranked in unique 24th Chapter of law. It seems that in the sphere of application of systemic laws, biggest problem is irregular and inadequate control and supervision in enforcing law, which is a topic for detailed analysis and research, while in application of criminal-legal provisions, apparent problem is incompetence, lack of proficiency and incompleteness of certain expertise on which by the rule is founded the court decision on specific criminal matter, as well as vague legal framework of subject of legal protection, which poses special problem in proving qualified forms of criminal offences. In fact, proving large number of criminal offences against the living environment is founded on the finding and opinion of court experts or authorized institutions. Providing material evidence which is available in the form of trace and/or object of criminal offence is indisputable by the rule, however in the procedure of proving guilt which is founded on the minutes of expertise, the outcome of the proceedings is uncertain by the rule or most often is ended in terminating the criminal proceedings, as attested by certain statistical analyses. In the aim of overcoming possible problems, it is necessary to provide broader education of representatives of legislative authorities and organs of preliminary investigation in the field of environmental law, as well as adequate selection of experts and accredited expert institutions to conduct expertise in certain criminal matters.

Literature

1. Bjelajac, Ž. Đ., Dašić, D., Spasović, M. (2011): *EU environmental policy and its criminal law framework*, Međunarodni problemi, Beograd, vol. 63, br. 4, str. 567-582.
2. Hamidović, Dž. (2012): *Legal protection of the environment and sustainable development if our country*, Soicioeconimica - Scientific Journal for Theory and Practice of Socio-economic Development, Novi Pazar, vol. 1(2), pp. 235-245.
3. Čavoški, A. (2011): *EU law in the sphere of living environment*, textbook for protection of living environment, group of authors, Association of public prosecutors and deputies of public prosecutors of Serbia, Belgrade.
4. Fitzmaurice, M. (2009): *Contemporary issues in international environmental law*, MPE Books Group, Cheltenham.
5. Jacqueline, P. (2005): *The precautionary principle in practice-environmental decision-making and scientific uncertainty*, Southwood, press pty, Sydney.
6. Jovašević, D. (2011): *Ekološki kriminalitet u Srbiji - teorija, praksa, zakonodavstvo*, Facta universitatis - series: Law and Politics, Pravni fakultet, Univerzitet u Nišu, Niš, vol. 9, br. 2, str. 109-134.
7. Kiss, A., Shelton, D. (2007): *International Environmental law*, Martins Nijhoff, Danvers**.**
8. Kramer, L. (2012): *Environmental Law*, 4th Edition, Sweet & Maxwell, London.
9. Lilić, S., Drenovak, M. (2010): *Ekološko pravo*, Pravni fakultet, Beograd.
10. Lukić, T. (2012): *Otkrivanje i istraživanje ekološkog kriminaliteta*, Revija za kriminologiju i krivično pravo, Beograd, vol. 50, br. 1-2, str. 219-234.
11. McIntyre, O. (2007): *Environmental Protection at International Watercourses*, Unread international law, Ashgate, Hempshire.
12. Odum, E. P., Barrett, G. W. (2005): *Fundamentals of Ecology*, 5th edition, Belmont, California: Thomson Brooks/Cole.
13. Ole, K. F., Hunter, D., Wang, X. (2009): *Yearbook of international Environmental Law*, vol. 20, Oxford University Press, Oxford.
14. O'Neill, R. V., Deangelis, D. L., Waide, J. B., Garland, E. A. (1986): *A Hierarchical Concept of Ecosystems*, Princeton University Press, Princeton.
15. Rakočević, P. (2011): *Krivičnopravna odgovornost zbog zagađenja životne sredine*, Glasnik Advokatske komore Vojvodine, Novi Sad, vol. 83, br. 4, str. 199-216.
16. Vrhovšek, M. (2007): *Krivično-pravna zaštita životne sredine prema novom Krivičnom zakoniku Srbije*, Pravo - teorija i praksa, Novi Sad, vol. 24, br. 7-8.

Legislation and websites:

1. *Agricultural land Act,* RS Official Gazette, no. 62/2006, 65/2008 – other laws and 41/2009.
2. *Chemicals Act*, RS Official Gazette, no. 36/2009.
3. *Decree regarding programme of systematic monitoring of land quality, indicators for assessment of risk from land degradation and methodology for making remedial programmes*, RS Official Gazette, no. 88/2010.
4. *Environmental protection Act,* RS Official Gazette, no. 135/2004, 36/2009 – et., 72/2009 – other laws.
5. *List of substances that cause concern,* RS Official Gazette, no. 31/2011.
6. *Mining and geological research Act,* RS Official Gazette, no. 88/2011.
7. *Rule book on allowed quantities of hazardous and noxious materials in land and water for irrigation and methods for their examination,* RS Official Gazette, no. 23/1994.
8. *Rule book on cadastral classification of land,* RS Official Gazette, no. 37/94, 49/94.
9. *The law on ratifying the Basel Convention on control of Trans boundary movements of hazardous waste and their disposal,* RS Official Gazette – International Agreements, no. 2/1999.
10. *The law on ratifying the Convention on availability of information, participation of the public in making decisions and the right to legal protection in environmental matters,* RS Official Gazette – International Agreements, no. 38/2009.
11. *The law on ratifying the draft Convention of UN on climate changes with annexes,* RS Official Gazette - International Agreements, no. 2/1997.
12. *The law on ratifying the Kyoto protocol with draft Convention of UN on climate changes,* RS Official Gazette – International Agreements, no. 88/2007, 38/2009 – other laws.
13. *The law on ratifying the Stockholm Convention on long-term organic polluting substances,* RS Official Gazette – International Agreements, no. 42/2009.
14. *Waste management Act,* RS Official Gazette, no. 36/2009, 88/2010.
15. *Zagađivanje zemljišta,* prezentacija, available at: http://www.scribd.com/doc/180847538/Zagadivanje-zemljista-pptx (retrieved at 13.02.2014.).

PRAVNA ZAŠTITA ZEMLJIŠTA OD ZAGAĐENJA

Zdravko Petrović[5], Dragan Manojlović[6], Vojislav Jović[7]

Rezime

Nalazi u istraživanju koje je izvedeno u ovom radu primenom metoda analize sardžaja, indukcije i dedukcije, istorijskom i dogmatko pravnom ukazali su da ekologija za svoj predmet pravne zaštite ima tri globalne prirodne vrednosti: vazduh, vodu i zemljište, odnosno atmosferu, hidrosferu i litosferu kao sastavne elemente biosfere. Zemljište kao posebna prirodna tvorevina obuhvata čvrsti površinski sloj Zemlje koji je specifičan za biosferu. Značaj zemljišta iz aspekta održivog razvoja jeste višestruki, naročito ako se sagledava preko njegove ekološke, industrijske, proizvodne, socijalno-ekonomske, vaspitno-obrazovne, naučno-istraživačke, kulturno-istorijske i svake druge opštekorisne funkcije. Njegova najvažnija funkcija jeste plodnost, odnosno sposobnost da floru snabdeva vodom, kiseonikom i mineralnim supstancama. Prirodni procesi koji su doveli do nastanka zemljišta argumentuju stanovište koje ga svrstava u takozvane obnovljive resurse ali samo pod uslovom da ga čovek racionalno koristi i podstiče njegovu prirodnu reprodukciju. U skladu sa važećom zakonskom regulativom i kategorizacojom zemljišta, ovo istraživanje obuhvata poljoprivredno zemljište. U ovom radu opredelili smo se za ekološkopravnu zaštitu zemljišta kao jedne od najvažnijih prirodnih vrednosti čiji kvalitet i stepen zaštite veoma značajno utiče na stanje životne sredine u celini. Uvodni deo rada obuhvatio je terminološka razgraničenja i specifičnost predmeta izučavanja ekološkog prava, kao i moguće oblike zagađivanja zemljišta. Metodlooškim okvirom istraživanja, primenom metoda analize sadržaja postojeće domaće i inostrane pravne legislative, metodom komparacije i sinteze istraženi su pravni akti kojima se štiti zemljište od zagadjenja.

Ključne reči: *ekološko pravo, životna sredina, zemljište, pravna zaštita, nacionalni i nadnacionalni propisi.*

5 Prof. dr Zdravko Petrović, redovni professor, Fakultet za pravo, javnu upravu i bezbednost, Bulevar umetnosti 29, 11070 Novi Beograd, Srbija, Telefon: +381 63 575 880, E-mail: zpetrovic@megatrend.edu.rs

6 Prof. dr Dragan Manojlović, vanredni professor, Fakultet za pravo, javnu upravu i bezbednost, Bulevar umetnosti 29, 11070 Novi Beograd, Srbija, Telefon: +381 64 322 19 26, E-mail: dmanojlovic@megatrend.edu.rs

7 Doc. dr Vojislav Jović, Fakultet za pravo, javnu upravu i bezbednost, Bulevar umetnosti 29, 11070 Novi Beograd, Srbija, Telefon: +381 63 133 39 99, E-mail: vjovic@megatrend.edu.rs

Review Article

Economics of Agriculture 3/2014
UDC: 631.674:631 NEGOTIN

NEGOTIN LOWLAND IRRIGATION SYSTEM UPGRADING[1]

Vesna Popović[2], Nataša Kljajić[3], Jonel Subić[4]

Summary

According to FAO concept of irrigation modernisation, to be effective, an irrigation system must be based on improved irrigation efficiency, reduced operation and maintenance costs and improved cost recovery based on raised agricultural productivity, with due consideration to the institutional and legal-related issues and environment protection. To make the irrigation system successfully upgraded, the project needs to undergo a comprehensive analysis of the factors that lead to the modernization.

Using the IPTRID/FAO-AGLW methodological approach of addressing causes for irrigation modernization, the authors in the paper review technical, socio-institutional, economic-financial and environmental causes for upgrading of the irrigation system in the Negotin lowland and give some recommendations for successful realization of this project, based on international and regional experiences and adjusted to specificities of local agriculture and rural communities.

Key words: *irrigation system modernization, irrigated agriculture profitability, water users' associations.*

JEL: *Q15*

Introduction

Agriculture accounts for 70% of global water withdrawals (UN, 2011). The estimations indicate that the potential water savings in the EU irrigation sector would amount to 43% of the current agricultural volume abstracted (Ecologic, 2007).

1 Paper is a part of research within the project no. III 46006 - Sustainable agriculture and rural development in the function of accomplishing strategic objectives of the Republic of Serbia in the Danube region, financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia. Project period: 2011-2014.

2 Vesna Popović, Ph.D., Principal Research Felow, Institute of Agricultural Economics, Volgina Street no. 15, 11060 Belgrade, Serbia, Phone: + 381 11 6972 858, E-mail: vesna_p@iep.bg.ac.rs

3 Nataša Kljajić, Ph.D., Research Associate, Institute of Agricultural Economics, Volgina Street no. 15, 11060 Belgrade, Serbia, Phone: + 381 11 6972 858, E-mail: nataša_k@iep.bg.ac.rs

4 Jonel Subić, Ph.D., Senior Research Associate, Institute of Agricultural Economics, Volgina Street no. 15, 11060 Belgrade, Serbia, Phone: + 381 11 6972 858, E-mail: jonel_s@iep.bg.ac.rs

Water savings can be carried out with improvements in irrigation infrastructure and technologies, including irrigation management transfer and participatory irrigation management to assure that irrigated agriculture become more productive while assuring environment conservation. This "integrated approach of technical and managerial upgrading of irrigation schemes combined with institutional reforms with the objective to improve resource utilization (labour, water economics, and environment) and water delivery service to farms" is defined by FAO as the *Concept of Irrigation Modernization*[5] (Wolters, Burt, 1997). Irrigation and drainage will be more site-specific and much more closely linked with policies and plans in agriculture and other sectors (Svendsen, Turral, 2007).

The irrigation sector in Southeastern European countries in transition has undergone dramatic period over the last two decades, characterised by the sharp decline in budget subsidies and poor results in collection of water charges that caused serious delays in maintenance and investment in the irrigation sector. Furthermore, the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (2007) indicates that climate change is projected to worsen in Southern Europe and to reduce water availability, hydropower potential and crop productivity.

The Republic of Serbia has chosen irrigation and maintenance of irrigation systems as the main mitigation practices regarding drought (DMCSEE, 2011).

Irrigation systems have been built mainly on land under classes I and II of suitability for irrigation. Under clases I – III around 3,641,000 ha are grouped, of which around 1,600,000 ha are in the clases I-II of the most productive land for irrigation (IJČ, 2001).

According to 2013 statistics, which monitors irrigation on agricultural land of business entities and cooperatives, 85,593 ha were covered by irrigation systems of which 53,086 ha were irrigated (62%). The share of irrigated land in utilized agricultural area was 1%. Total water abstracted for irrigation was 88,130 thous. m^3. Most was pumped from rivers (91%) while the rest was abstracted from the groundwater, lakes, reservoirs and public water supply network (RZS, 2014). Agricultural census (2012) has a broader scope of research and in addition to agricultural land of legal entities and entrepreneurs includes family farms. According to these data, in 2011/2012 production year, 71,947 agricultural holdings (11,4%) irrigated 99,773 ha. Family farms mostly use groundwater for irrigation, hence it is the main source of water for irrigation (51.6%), while surface water outside holding accounted 31% (RZS, 2013a).

Faced with a lack of funds for the rehabilitation and upgrading of irrigation and drainage systems degraded due to poor maintenance in the years of economic crisis and transition, the Republic of Serbia concluded with the IBRD/IDA Development Credit Agreement (2005) and Additional Financing Loan Agreement (2007) for financing *Irrigation & Drainage Rehabilitation Project* in the 2005-2014 period.

Along with the above-mentioned activities, in 2012 the Ministry of Agriculture – Agricultural

5 The irrigation modernization refers to both irrigation and drainage related actions, but the analysis in this paper will focus only on irrigation.

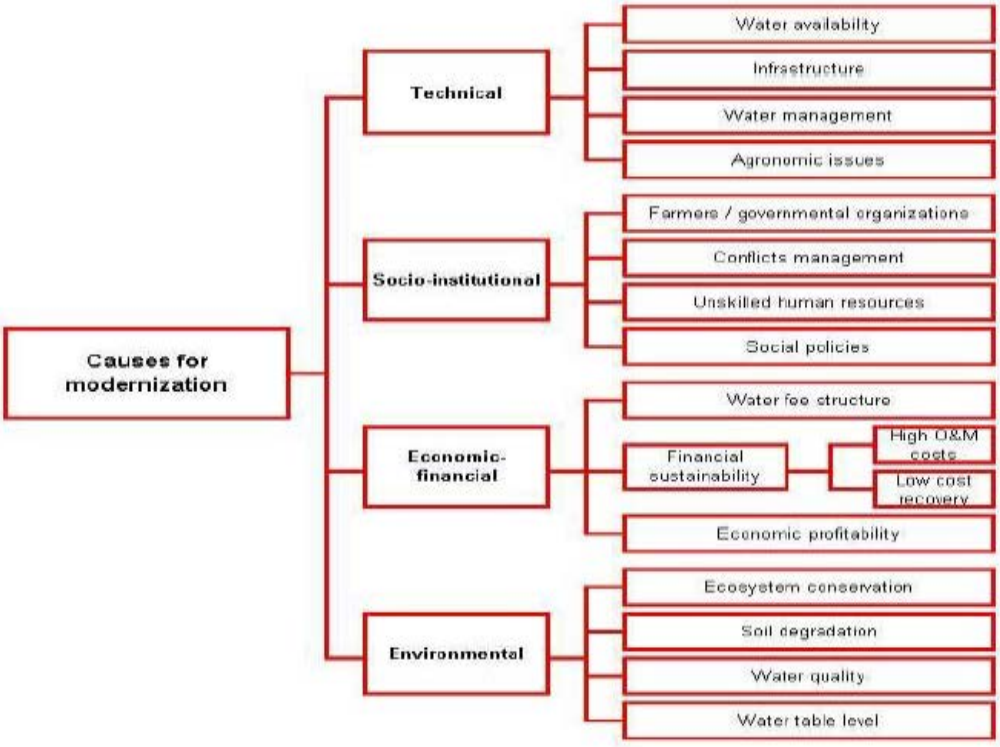
Land Department is starting with the implementation of a project of rehabilitation, revitalization, reconstruction, modernization and construction of irrigation systems. Among the priorities of the project is the *upgrading of hydro-system for the irrigation of the part of Negotin lowland* (JVP "Srbijavode", 2014).

The subject of analysis in this paper are the causes for upgrading the Hs Negotin lowland and its profitable exploitation for irrigation in the future. The results should be used as feedback to ongoing and future irrigation modernization process in the region.

Data sources and used methodology

Research was based on IPTRID/FAO-AGLW methodological approach (2002) of addressing causes for irrigation modernization based on "4-branch tree" areas of concern: (1) *technical,* (2) *socio-institutional*, (3) *economic-financial* and (4) *environmental* (Figure 1).

Figure 1. Causes for Irrigation Modernization



Source: IPTRID/FAO-AGLW Collaborative Initiative, (2002).

According to the methodological guideline, it is not necessarily that all these elements need to be present in every modernisation process. What will be included depend of the site-specificities and scope of modernization process at hand.

A number of scientific papers, reports and case studies on the modernization of irrigation schemes were analysed and quoted. The data of The Statistical Office of the Republic of

Serbia (RZS) and The Republic Hydrometeorological Service of Serbia (RHMZ) were used as well as water legislation acts published in the Official Gazette of the Republic of Serbia (Sl. glasnik RS). The authors also consulted the World Bank Serbian Irrigation & Drainage project' reports, business plans and project documentation of Public water management company (JVP) "Srbijavode" and field surveys of Agricultural extension service Negotin.

Research results and discussion

Technical Causes for the Modernization

The Negotin lowland, measuring 16,000 ha, is located in eastern Serbia, on the border of Serbia, Romania and Bulgaria and belongs administratively to the Negotin municipality. The boundary of the north and east is the River Danube and the downstream of the Timok river basin, from the south the mountain hinterland of Timok and Jasenička rivers, and from the west the plateau in the direction of Prahovo - Samarinovac - Miloševo - Negotin.

Water availability

Climate-related factors. Negotin lowland has a continental climate, characterized by cold winters and hot summers. Autumn is warmer than spring. Average maximum air temperature for the area of Negotin in 1981-2010 ranged from 3.9°C (January) to 29.7°C (July) and the average minimum in the range from -3.1°C (January) to 16.6°C (July). The absolute maximum, recorded in the same period, was in July (42.6°C), while the absolute minimum was in January (-26.7°C). The average annual amount of rainfall is 613.6 mm (305.8 mm during the vegetation period). The average annual value of the reference potential evapotranspiration is 869.8 mm (693.9 mm in the vegetation period), (Table 1).

Table 1. Mean monthly values of climatic parameters in the period of 1981-2010.

Parameters	I	II	II	IV	V	VI	VII	VIII	IX	X	XI	XII	God.
Tmin,°C	-26.7	-24.6	-18.0	-4.9	1.0	3.1	7.5	5.6	1.3	-6.5	-12.5	-21.9	-26.7
Tmax,°C	21.0	22.4	26.6	30.6	35.5	41.2	42.6	39.3	37.7	32.5	25.9	20.6	42.6
Tmed,°C	0.3	1.9	6.6	12.2	17.7	21.3	23.5	22.8	17.6	11.6	5.5	1.1	11.8
P, mm	41.8	44.1	47.6	53.5	50.8	59.2	49.4	47.5	45.4	49.5	58.4	66.4	613.6
Insolation	80.2	99.0	141.3	185.5	243.1	279.8	310.1	284.1	208.4	139.0	76.8	62.0	2109.2
R.humid, %	80	75	69	66	66	63	60	62	69	76	81	83	71
Trop. days	0	0	0	0	2	8	16	16	3	0	0	0	44
Eto (mm)*	16.6	22.9	46.9	78.3	110.2	135.3	151.7	130.9	87.5	48.5	24.5	16.4	869.8

Source: RHMZ, 2012, www.hidmet.gov.rs/ciril/meteorologija/stanica_sr.php?moss_id=13295

Note: Period of 1971-2000, *Penman Montheith* method.

According to the Water Master Plan (Sl. glasnik RS, 11/2002), water needs of plants (including post-stubble cropping and intercropping) in the region of Negotin are at the level of 360 mm. These requirements represent 80% of provision of water for all crops sowing in irrigated agriculture production system.

In the period 1950-2005, the largest decrease in rainfall of around 120 mm per annum on the territory of Serbia is recorded in Negotinska Krajina[6]. This area is faced with more frequent and longer-lasting droughts. In 2007-2012, humidity conditions during the vegetation period, determined on the basis of the standardized precipitation index (SPI), only in one year (2008) were found to be normal. In 2007 during the growing period there was severe drought, in 2009 and 2010 drought, and in the 2011 exceptional drought, which has continued in a somewhat milder form during the winter period (severe drought category), and 2012 growing season was assessed as the period of moderate drought[7].

Water resources. Hydropower potential of Negotin are rivers Danube (length 31 km), Timok, Sikolska, Jasenička, Slatinska and Zamna. Internal waters in this area are scarce - the average annual flow in the basin of the Danube from Mlava to the border with Bulgaria is 51.9 m^3/s, while the minimum monthly flow of 95% probability is only 2.1 m^3/s. The Danube is the most important water source when it comes to irrigation. Danube river in the profile of Veliko Gradište is recorded an average annual flow of 5,466 m^3/s. Minimum monthly flow of 95% probability (small monthly water) is 1,800 m^3/s, whereas the maximum large flow with the probability of 1% is 16,114 m^3/s (Đorđević, 2009).

Water rights. The use of water for irrigation is carried out in accordance with the terms set in the water permit. Water permit regulates the manner, conditions and scope of the use of water for irrigation and shall be issued for a specified period, not longer than 15 years. The right acquired under the water permit can not be transferred to another person without the consent of the authority which issued water permit.

Agronomic-related issues

Soils. The most common type of soil in the lowland of Negotin is *smonitza,* which is mostly located in the cadastral municipalities (CM) of Dušanovac, Samarinovac and Prahovo and south from CM Kobišnica and CM Bukovče. Around the city Negotin and within a settlement of Miloševo, Kobišnica and Bukovče, to Timok and Danube, *humogley soils* and *peatlands* are present. *Alluvial deposits* are present along river flows. These soils belong to the third land capability class and with the use of agro- and hydromelioration measures provide high crop yields. *Sandy soils* cover Kobišnica plateau, and parts of CM Radujevac and CM Prahovo. Irrigation and fertilization increase the fertility of these soil types which is a good ground for the development of viticulture (Dinić, 1997; Hadžić et al., 2002).

Land use and production structure. According to data from 2012 Census of Agriculture, 4,658 agricultural holdings on the territory of municipality of Negotin have 30,726 ha of utilised agricultural area, of which 145 ha of kitchen garden, 21,905 ha of arable land,

6 RHMZ information about the Working Group I contribution to the IPCC Fourth Assessment Report, available at: http://www.hidmet.gov.rs/podaci/ ipcc/4_IZVESTAJ_RADNE_GRUPE_1_OSNOVNI_SISTEMI %20(SRP).pdf (in Serbian).

7 RHMZ estimation of humidity conditions in the vegetation period on the territory of Serbia based on SPI index, 2007-2012, available at: http://www.hidmet.gov.rs/ podaci/agro/SPI.pdf (in Serbian).

465 ha of orchards, 798 ha of vineyards and 7,404 ha of meadows and pastures. There is a strong polarization in the size of holdings – 64% of holdings, which have up to 5 ha, has 21% of the total utilized agricultural land, while only 13% of holdings, which are larger than 10 ha, has 55% of the total utilized agricultural land. Agricultural holdings in the municipality of Negotin have an average of 6.54 ha of UAA divided into 9 separate lots of UAA, with average lot size of 1ha. In addition, 10,558 ha of agricultural land owned by 2,826 agricultural holdings are abandoned due to depopulation and economic migration to Western European countries (RZS, 2013a).

On the arable fields the most common are cereals that were sown on 14,625 ha in 2012 (wheat , grain maize, oats, barley), industrial crops on 4,004 ha (sunflower) and fooder crops on 2,332 ha (lucerne, grass mixtures, clover). Favorable conditions exist for vegetables, melons and strawberries (286 ha, of which melons 191 ha) (RZS, 2013a).

On the orchards (465 ha, of which intensive plantations 199 ha) are grown apples, plums, pears, walnuts, peaches, sour cherries and blackberries (RZS, 2013a).

The Negotin vineyards (798 ha, with over twenty family wineries) have excellent relief, microclimate and pedological conditions for vine growing and a centuries old tradition of winemaking (Popović et al., 2012). Production of quality wine in drought conditions require controlled irrigation (Popović, Živanović Miljković, 2012). Krajina wine AD in early 80s of last century began with the raising of vineyard plantation with irrigation area of 1,000 ha. Due to business difficulties during the transition they planted only 200 ha, of which 100 ha were covered by the irrigation system. In dry years in irrigated area were possible to obtain yields higher by 30-35% than in non-irrigated area (SO Negotin, 2005).

The spacious meadow-pasture areas on the edge of the lowland (7,404 ha) enable the development of livestock grazing (51% of goats and 44% of sheep are in grazing system compared to 25% and 24% at national level), but a long, dry and hot summers do not favor the cultivation of forage crops, nor making meadow hay (Nikolić, Popović, 2010). Animal husbandry is poorly developed (31 LU/100 ha to 59 LU/100 ha of UAA at the national level), (RZS, 2013a).

Yields. According to the evaluation of drought impacts on the crop yields in the eastern Serbia in the period 1989–2000, the average drop in yields was 40.9%, compared to the average annual yields in the years without drought (MESP, 2010). Major fluctuations in yields in recent years confirm the necessity of upgrading the irrigation system (Table 2).

Table 2. Yields of basic agricultural products, 2005-2012.

Culture	Municipality of Negotin					Republic of Serbia				
	2005-2010			2011	2012	2005-2010			2011	2012
	MIN	MAX	AVER			MIN	MAX	AVER		
Wheat, *kg/ha*	1,400	3,596	2,952	3,574	3,429	3,060	4,068	3,388	3,943	3,719
Family farms	1,200	3,909	2,512	3,846	2,000	4,202	5,278	4,469	5,652	5,303
Legal entities and coop.										

Culture	Municipality of Negotin					Republic of Serbia				
	2005-2010			2011	2012	2005-2010			2011	2012
	MIN	MAX	AVER			MIN	MAX	AVER		
Maize, *kg/ha*	1,006	5,358	3,739	3,936	2,447	3,037	5,723	4,862	4,948	2,697
Family farms	700	6,250	3,758	3,000	7,713	5,117	7,494	6,664	7,399	3,735
Legal entities and coop.										
Sunflower, *kg/ha*	788	2,472	2,008	2,239	1,752	1,773	2,419	2,132	2,479	2,193
Beans, *kg/ha*	100	1,038	678	930	591	947	1,294	1,159	1,183	808
Potato, *kg/ha*	3,553	5,991	4,915	5,636	4,148	9,134	11,573	10,835	11,375	7,660
Clover, *kg/ha*	2,142	3,614	2,795	2,227	1,598	3,539	4,536	4,290	4,020	3,163
Lucerne, *kg/ha*	2,868	4,337	3,514	2,638	1,865	4,797	6,003	5,639	5,320	4,032
Meadows, *kg/ha*	830	1,595	1,264	1,977	751	1,476	2,055	1,827	1,841	1,333
Pasture, *kg/ha*	351	636	490	955	607	487	773	596	669	487
Apples, *kg/tree*	30.9	40.6	34.8	35.2	17.7	13.4	18.1	15.8	16.6	10.6
Plums, *kg/tree*	17.2	25.1	19.6	18.3	13.0	7.1	16.2	12.9	14.3	9.7
Grape, *kg/tree*	0.7	2.1	1.4	1.9	1.3	0.7	1.5	1.1	1.2	1.0

Sources: RZS. Municipalities of Serbia 2006-2009, Belgrade, 2007-2010; RZS. Municipalities and regions of the Republic of Serbia 2011-2013, Belgrade, 2011-2013.

Irrigation. Studies have shown that in the local climatic conditions and with the application of appropriate agricultural inputs and techniques, irrigation can increase yields by 50 to 80%, and in the years with a severe drought for 2 to 4 times in some crop species (Dragović, 2001; Maksimović, Dragović, 2004; Obradović et al., 2012).

According to 2012 Agricultural Census, 459 agricultural holding in Negotin municipality irrigated 410 ha (1.3% of UAA), of which 357 ha of arable land (vegetables, melons and strawberries in outdoor conditions 166 ha, cereals and maize for fodder 154 ha, sunflower 19 ha), 41 ha of fruit plantations, 3 ha of vineyards and 9 ha of other permanent crops. The most common irrigation method is surface irrigation (62.6% of irrigated area), then drop irrigation (24.2%) and sprinkler irrigation (13.1%). Main water sources for irrigation are groundwater (49.9%) and surface water outside holding (34.8%), (RZS, 2013a).

Hydromelioration infrastructure

Of the total area covered by the Negotin lowland, 11,800 ha can be irrigated. This area is divided into two altitude zones. The higher altitude zone includes Kobišnica plateau altitude 40-80 m (CM Kobišnica and CM Bukovče) and the area west of the line Prahovo - Samarinovac - Miloševo with the altitude of 60 to 120 meters. Lower altitude zone, with an altitude of approximately 30-40 m covers the rest of the Negotin lowland. Land consolidation in this area was completed in 1985 year, except in CM Srbovo and CM Radujevac, and during this process the area for hydro-system completion was reserved.

Pilot project for construction of hydro-system for irrigation of Negotin lowland (1977) was based on the use of the existing pump station IHP "Prahovo", consists of three mutually independent systems - pumping stations (PS): "Kusjak", "Radujevac" and "Kosno Grlo III", and is designed to cover an area of 1,100 ha of arable land dominantly owned family farms. The hydro-system consists of a main pipeline length of 13,500 m constructed of steel pipe of different diameters (600-250 mm). Secondary piping that carries water to the

end users are built of PE pipes of different diameters (250-125 mm). Audit of the project by the "Hidroinvest DTD" in the Novi Sad (JVP "Srbijavode", 1996) were consolidated three existing independent systems in a distribution system. Basic approach in the choice of technical solution is the creation of a ring network as the basic skeleton of the distribution network which brings water to the secondary connections. This helps ensure consumer participation along the whole system in investment in the system as a whole. Source of water supply is the river Danube.

Advantage of the system is the construction in stages. So far, there have been built 9 secondary pipelines with total length of 6,450, and also 79 hydrant heads diameter 125 and 100 mm. One hydrant head covers three to five parcels depending on the size of parcel. The pipeline's operating pressure of 2.5 bar which gives farmers a wide variety of irrigation equipment. On the systems there are built other facilities - flow meters, valves, drains, manholes, etc. (DD ''HIDROINVEST'' DTD, 1996).

According to Spatial plan of Negotin municipality (Sl. list opštine Negotin, 16/2011), planned works on the extension of Hs Negotin lowland, covering all 11,800 hectares suitable for irrigation, have been divided into three phases. The first phase of construction is PS "Kusjak", capacity of 5 m^3/s, upstream of the Kusjak dock, with pressure piping and basins in the hilly zone of Dušanovac. The construction of PS "Kusjak" with tank and distribution network would ensure irrigation of 70% above areas. However, the first phase includes the construction of 38% of maximum capacity consumption, meaning 1,560 l/s. At this level of development management system is simple since the charge piping is done from an open reservoir by gravity. A further demand for water will result in a pressure drop in the network and the need to involve in work PS "Kosno Grlo III." PS "Kosno Grlo III", capacity of 2 m^3/s will enable the irrigation of 3,744 hectares in the two altitude zones and its construction is planned in the second phase, in addition to the existing drainage pumping stations, while the tanks, the ground conditions were located about 2.7 km from the pumping station. The third phase will be PS "Radujevac" upstream from Radujevac a capacity of 1.5 m^3/s, with pressure pipeline to the tank, length 500 m, and allow irrigation of 1999 ha in the upper parts of the area. Upon completion of the irrigation Negotin lowland it would be secured to the pressure in the pipe from 5 bar and could be used by various modes of irrigation that meets the designed pressure.

Water management

Law on Waters (Sl. glasnik RS, 30/2010) found that Republic of Serbia realizes water management through relevant ministries, provincial and local administrations and public water management companies (PWMC). Lower Danube water area, which comprises the Hs Negotin lowland is in the responsibility of the PWMC "Srbijavode".

Public water management companies in water areas for which they are responsible, manage water resources and adjusted the water needs of different users; monitor, maintain and improve the water regime; manage water facilities for rivercources regulation and flood protection; menage drainage structures in public ownership, dams with reservoirs, locks on the canals and irrigation systems; organize and implement measures of protection from

erosion, torrents and water pollution; prepare programs, plans and technical documentation, take care of water management information system and perform the obligations of international cooperation in the field of water management.

Public water management companies entrusted part of the maintainance works on water facilities to water management enterprises, organized largely on the territorial principle. With these enterprises public water management companies enter into long-term contracts for technical cooperation. Lack of funding in the last two decades has seriously jeopardized the functioning of the water management system in Serbia.

Socio-institutional Causes for the Modernization

Human resources

Outflow of residents abroad is characteristic of the municipality of Negotin. A large number of young people are living and working in Western Europe. According to the preliminary results of the Census of 2011, in addition to 36.879 residents, abroad is still 12,427 persons. The people abroad in a number of settlements, primarily in economically most vibrant areas called Danube Valley's development belt, exceed the number of those who live in them (Dušanovac, Mala Kamenica, Slatina, Mihajlovac). It is required a more active role of the state, local communities and associations of producers to encourage returnees from abroad to invest in agriculture and irrigation (RZS, 2011).

Holding population. The most members of agricultural holding in the municipality of Negotin are situated on the family farms (99%). The number of members per holding and educational structure of the holding managers are a serious development constraint. Although this is about slightly larger holdings than the national average (6.5 ha compared to 5.4 ha at the national level), just a small number of persons live and work there (68% of agricultural holdings have 1-2 persons and 28% have 3-4 persons), with low level of education (78.2% of holding managers have only practical agricultural experience, 0.3% agricultural courses, 3% have secondary agricultural school, college or faculty, and 18% other secondary school, college or faculty), (RZS, 2013a).

Farmer associations. Association of producers is necessary to overcome the existing limitations, which greatly hinder the development of profitable farming (small property, shortness of supply of inputs, low bargaining power of farmers in the purchase, lack of storage and processing facilities, the introduction of quality standards and branding, etc.). Negotin municipality has a century old tradition of cooperatives. Today, operate agricultural cooperatives: "Oilseeds" Negotin, "Prahovo" and "Jeremić" LTD, Prahovo, "Dinković" Kovilovo, "Poljokop" Jabukovac, "Radujevac", Radujevac, and "Spring" Šarkamen; specialized fruit-viticulture-vine cooperative in Smedovac and "Krajinska wine cooperative" Rogljevo; and agricultural associations of winemakers of Negotinska krajina, of fruit growers in Karbulovo, of livestock breeders of the municipality of Negotin and of beekeepers "Hajduk Veljko" in Negotin (SO Negotin, 2012).

Extension service. The main activity of the Agricultural extension service Negotin is the transfer of knowledge and the provision of advisory services to farmers, related to the use

of resources and inputs in agriculture (fertilizer and pesticide use, control of seeds and plant materials quality, etc.). When it comes to irrigation, it is necessary, guided by the international experiences, to provide specialized consulting services in the area, either as a separate service, or a special section of the existing agricultural extension services, which would be financed from the budget or co-financed by the water users. Annual development program for advisory services in agriculture in 2014 (Sl. glasnik RS, 34/2014) stipulates for 5 of the 22 regional agricultural extension services the obligation of engaging advisors for meliorations, but not for Negotin agricultural extension service.

Water users' associations

FAO defines *irrigation management transfer* as a (full or partial) reallocation of responsibility and authority for management of irrigation systems from government agencies to non-governmental organizations such as water users' associations (WUAs) at irrigation system or subsystem levels (Vermillion, Sagardoy, 1999).

World Bank's experts defined the process of institutional reforms in irrigation as a continuum of reducing government involvement and increasing participation by user associations and private sector service providers, where the attention should shift from individual institutional model to the the mix of models that can offer the best water service (Darghouth, 2007).

The WUA usually governs and manages the system directly up to the tertiary or distributary level and in this case appoints or hire a few technically competent full time staff for seasonal work on water distribution, channel cleaning and collecting water charges. At higher hydraulic levels, it is common for WUAs (or Federation of WUAs) to handle only governance or oversight functions, while professional staff of WSP company owned or contracted by WUA handle operation and maintenance (O&M) service[8]. In order for the activities of WUAs to be economically viable it may be considered the formation of multifunctional WUAs, who would financed part of the O&M service costs with the profit from the secondary activities (provision of agricultural inputs, agricultural processing and marketing, etc.). WUAs or Federations of WUAs can also play a role in environmental policy advisory bodies (Garces-Restrepo et al., 2007).

Law on Waters (2010) regulates, in accordance with the separate law, the establishment of water users' associations of the interested parties in the melioration area or part thereof in order to provide conditions for various types of water uses and protection from the damaging effects of water. Law on WUAs in agriculture (draft) is primarily oriented to the establishment and operation of WUAs that will govern and manage minor irrigation schemes in order to ensure coverage of small holdings with irrigation systems and the legalization of the use of water for irrigation by these farms.[9]

8 Including delegation of all the transferable irrigation and drainage functions to a third party under various forms of longterm public-private partnership arrangement (Darghouth, 2007).

9 Draft Law on water users' organizations in agriculture, available at: http://www.rdvode.gov.rs/javne-rasprave.php (in Serbian).

The draft law provides the possibility of the formation of the Federations of WUAs. The experiences and views of countries with a developed network of WUAs confirm that better irrigation services and participation in decision making will only be possible by federating WUAs at scheme level to provide representation in the river basin councils, as basis for real irrigation management decentralization (Tusa et al., 2007).

Institutional Strengthening and Capacity Building component of World Bank Irrigation and Drainage Rehabilitation Project in Serbia comprises activities related to WUAs establishment. Draft WUAs Law has been prepared and publicly disclosed and discussed during 2013, and 28 WUAs are supported and fully established thus laying grounds for further activities in this area in the irrigation sector (World Bank, 2014).

Financial/Economic causes

Water tariff structure and irrigation sector financing

The concept of full cost recovery requires that water prices reflect the financial, environmental and resource costs of supplying water. Including concept of full cost recovery in agriculture is very complex. A key challenge lies in establishing water pricing that minimises impacts on farm income but incentivises water conservation and recovers a larger share of costs, including those related to environmental degradation (EEA, 2012).

As a result of the global economic crisis and associated budget restrictions, the budget appropriations and funds for the irrigation sector are reducing and there is a growing pressure to increase user involvement in the financing of O&M and capital costs of irrigation. This policy must be accompanied by the transfer of management to WUAs and increased transparency of water service providers, and implemented in terms of increasing profitability of irrigated agriculture (Svendsen, Turral, 2007).

Among the different agricultural water pricing mechanisms in Europe, the most common are the two-part tariff (combining a flat rate and a unitary volumetric rate), and the tariff based on the irrigated area (Ecologic, 2007). The fee based on a single price per unit of water is considered the first choice in terms of water savings, but it is rarely used due to the high cost of water metering. The effects of pricing policies on water demand and water savings depend on the price elasticity i.e. profitability of irrigated crops.

Water charges in Serbia are defined by the Law on Waters, and the amount per annum determined by government regulation. The area encompassing the Negotin lowland, provided the following *charges for irrigation*:

The charge for use of water resources. Payer is a legal entity, entrepreneur or individual, that pays the use of water for irrigation according to the volume of water (RSD/m^3), where there are devices for measuring the amount of water, or according the irrigated area (RSD/ha), where mention equipement do not exist.

The charge for use of water facilities and hydro-systems. Payer is the owner/user of agricultural and forest land, which uses water facilities and irrigation systems in public ownership, and the tariff is two-part: fixed component, based on installed capacity (RSD/

ha) and variable, based on engaged capacity - volumetric (RSD/1000 m^3), or based on irrigated area, if there is no measuring device (RSD/ha).

User of water supplied through the high-pressure pumping station pays additional charge (RSD/l/s) of installed capacity of the pumping station used for his irrigated area.

If the equipement used are parts of the regional irrigation systems (such as Hs Negotin lowland), additional two-part tariff is charged - according the installed capacity (RSD/ha), and the engaged capacity (RSD/1000 m^3 or RSD/ha where there is no measurement device).

For the implementation of the project of rehabilitation, modernization and upgrading of irrigation systems, in addition to budgetary appropriations significant funding from foreign sources of financing are expected (IBRD/IDA, UAE). The use of these funds is conditioned by ensuring the relevant technological, and institutional requirements in terms of environmental protection in the water management sector, as well as economic conditions in the sector of irrigated agriculture.

Agricultural profitability

Irrigation allows higher cropping intensities (intercropping, etc.) and diversification of agricultural production toward higher value crops and niche products (fruits and vegetables, vinegrapes, etc.), thus providing stabilization and growth of farmers' income, foster entrepreneurship and producer associations and rise overall rural economy.

Calculating the *margin of coverage* based on the variable costs for different types of plant production serve as a basis for economic analysis and business planning on farm, in order to obtain high-quality products with the lowest possible production costs. The calculation based on the variable costs enables direct comparison of the financial performance of two different lines or phases of crop production with equal fixed costs, and a comparison of two or more different intensities of the same lines or phases of crop production (Subić et al., 2010). Margin coverage is defined as the difference between the total value of production (value of the base product plus the value of by-products and subsidies) and proportionate variable costs, and in mathematical form is represented by the formula:

$$\mathbf{MC}_{\textit{(margin of coverage)}} = \mathbf{VP}_{\textit{(value of production)}} - \mathbf{VC}_{\textit{(variable costs)}}.$$

Regarding structure of agricultural production in Negotin lowland and using calculations cover margins based on the variable costs, in the analysis below a contribution of irrigation to yield and profitability increases in production of corn, potatoes and watermelon was evaluated.[10] In different production lines different effects achieved. However, common to all crops analysed is the increase in yields (revenue and profit growth) due to the application of irrigation, whose costs have not significantly affected the total amount of variable costs (Table 3).

10 Calculations are based on Agricultural extension service Negotin data of annual value of production and production costs per hectar, realised on family farms in settlements: Prahovo, Rečka and Čubra during production year 2011/2012.

Table 3. Margin of coverage based on the variable costs - the effects of irrigation

Opis	Corn		Potato		Watermelon	
	(EUR/ha)	%	(EUR/ha)	%	(EUR/ha)	%
Calculations without irrigation						
VP_0 (Value of production)	830.85		1826.06		2,002.98	
VT_0 (Variable costs)	444.53		1363.89		1,959.10	
MP_0 Margine of coverage (VP_0-VT_0)	**386.32**		**462.17**		**43.88**	
Calculations with irrigation						
VP_1 (Value of production)	1,604.90		5,364.58		4,922.26	
VT_1 (Variable costs)	558.84		1,483.59		2,078.72	
MP_1 Margine of coverage (VP_1-VT_1)	**1,046.06**		**3,880.98**		**2,843.54**	
Calculation of the effect of irrigation						
$VP_1 - VP_0 = VP_p$ (Revenue increase)	774.05	93.16	3,538.52	193.78	2,919.28	145.75
$VT_1 - VT_0 = VT_p$ (Increase in variable costs) = Tn (Irrigation costs)	114.31	25.71	119.71	8.78	119.62	6.11
$MP_1 - MP_0 = MP_p$ (Increase in profit)	**659.74**	**170.78**	**3,418.82**	**739.74**	**2,799.66**	**6,380.61**

Source: Author's contribution based on: Gavrilović, (2012).

Analyzing the effects of irrigation on selected crops, leads to the following observations:

- *In corn production,* irrigation has caused:
  - Growth of 100.00% yield and increase the production value of 93.16%;
  - Increasing the overall value of the variable costs of 25.71%;
  - Increase in profits by over 170%.
- *In potato production,* irrigation has occurred:
  - Growth of 200.00% yield and increase the production value of nearly 194%;
  - Increase in total variable costs of 8.78%;
  - Increase in profits of 739.74%.
- *In watermelon production*, irrigation has achieved:
  - Growth of 150.00% yield and increase in production by over 145%;
  - Increase in total variable costs for 6.11%;
  - Increase profits by 6,380.61%.

Given the specific examples, it can be said that irrigation contributes significantly to the growth of the profitability and competitiveness of the family farm. Given the costs, irrigation also leaves plenty of room for after covering variable costs, the remaining funds cover fixed costs and achieve positive financial results.

Environmental causes

Soil Degradation

Irrigation regulates water-air regime of soil and increase yields. However, despite all the positives, irrigation also has a negative consequences related to soil and ecosystems. Given the geological structure and the hydrological and pedological

characteristics of Negotin lowland, the most common problems that occur due to improper application of irrigation and its application in unsuitable conditions are:

Waterlogging. There is increasing the level of ground water in the plant root zone and creates anaerobic conditions. The lack of oxygen causes the plants have delayed growth, yellow and die. This problem is most commonly regulated by drainage or application of other agri-melioration measures.

Salinization and alkalinization. Salinization is the process of accumulation of harmful salts in the surface soil layer. The reasons for this may be use for many years of irrigation water with high content of harmful salts, or taking salt from underground mineralized water. Dominated by sodium ions occurs alkalization process that contributes to poor water-physical and chemical properties of the soil. Raising the level of groundwater that leading to waterlogging process, can also lead to salinization and alkalization in the case of groundwater with higher concentration of salt.

Nutrient leekeage. It occurs when intensive irrigation cause nutrients descending in the deeper soil layers, impoverishing the soil and reducing its production capacity. This problem is usually solved by appropriate crop rotation, fertilization and adequate treatment of the land. From the perspective of the irrigation, this problem can be solved by proper setting of time and quantity of irrigation, thus reducing the deterioration of water-physical properties of soil and irrigation erosion phenomenon.

Irrigation erosion. Most common in surface irrigation methods (furrow and overflow). It can occur in sprinkling irrigation on sloping terrain and when the intensity of rain is not in accordance with the process of infiltration into the soil. Directly dependent on soil structure, so improvement of the structure and stability of soil structural aggregates prevents irrigation erosion.

Ecosystem Conservation. At sites where irrigation is applied there is increasing diversity and biomass of plants and insects, which can result in proliferation of insects harmful to crops (beetles, corn root worm, etc).

Conclusions

Economy of Negotin lowland is dependent on agriculture and agricultural productivity depends to a great extent on the construction of irrigation systems.

According to data of the Agricultural extension service Negotin, farmers who have used irrigation system in Negotin lowland during the previous decade testify of 2-5 times increased yields of some crops in relation to the average achieved in non-irrigated production.

Investing in the irrigation system construction is based on the existence of adequate technical, social, institutional, economic, financial and environmental conditions which have been discussed earlier in the text. The main benefits and constraints of Hs Negotin lowland construction will be summarized below.

Advantage of Hs Negotin lowland is the construction in stages. Agricultural Land Department of the Ministry of Agriculture has approved 113.7 million dinars to PWMC "Srbijavode" for the construction of irrigation system on 700 ha on the Negotin lowland in 2014. Thus, with the existing 450 ha will be completed pilot irrigation system "Prahovo" in the area of 1,150 ha, that started two decades ago.

To justify the investment it is necessary that a sufficient number of landowners and land users declare their intention to use the water from the irrigation system and, organized in a water users' association, participate in irrigation management.

Population decline and lack of funding are the major obstacle for efficient use of irrigation in agriculture in Negotin lowland. The construction of irrigation system as well as the budgetary support to irrigated agriculture and to entrepreneurship in agriculture and rural tourism can be a triggers for the decision of local farmers and entrepreneurs as well as of the people abroad to return home and invest their savings in agriculture, including the purchase of irrigation equipment.

Farmers and WUAs may use budgetary subsidies to irrigation in the frame of annual *Program of work on protection, reclamation and use of agricultural land* for the purchase of equipment for irrigation systems (compensation of 100% costs of constructing water intake and the primary network and subsidization interest on bank loans for the purchase of irrigation equipment). Budget funds intended for rural development support, co-financed drip and sprinkler irrigation systems for the vegetable growers in the open.

Institutional constraints are also present. There is a delay in the adoption of the *Law on water users' organizations in agriculture* as well as poor results in the privatization of water management enterprises. The proposed nationalization of water management enterprises and the formation of weak WUAs, in the absence of complete legislative support, does not refer to progress in reducing the role of government in the management of irrigation for the benefit of water users associations and private water service providers.

Urgent action by the state, regional development agencies and local stakeholders is necessary in animation of local population and fostering revitalization of cooperatives and associations of producers and water users as well as additional involvement of extension services in irrigation. Agricultural extension service Negotin, covering the territory of municipalities Negotin, Bor, Kladovo and Majdanpek, has no advisor in the field of meliorations.

Considering the level and expected rise in water charges and in the rate of their collection on the one hand, and the higher yields in irrigated agriculture on the other, irrigation should be efficient, environmentally appropriate and profitable. It is not necessary to emphasize the importance of production structure adjusting and proper market analysis for farmer's decision-making related to irrigation.

Cross-border and regional cooperation and exchange of experience is definitely a great help in the process of technical and managerial upgrading of irrigation schemes and related institutional reforms.

Main results of the analysis of causes for upgrading Hs Negotin lowland summarized here support the decision on its construction, on a comprehensive basis, which includes socio-institutional improvements and fulfillment of appropriate economic-financial and environmental conditions, according to FAO concept of irrigation modernization.

Literature

1. Darghouth, S. (2007): *Emerging Public-Private Partnerships In Irrigation Development and Management,* The World Bank, Water Sector Board Discussion Paper Series: Paper No. 10.
2. DD ‘’HIDROINVEST” DTD (1996): *Hidrosistem za navodnjavanje dela Negotinske nizije korišćenjem postojeće pumpne stanice IHP Prahovo,* Novi Sad.
3. Dinić, J. (1997): *Prirodni potencijal Srbije. Ekonomsko-geografska analiza i ocean,* Beograd, Ekonomski fakultet.
4. DMCSEE - Drought Management Centre for South East Europe (2011): *E-newsletter* 02, February 2011.
5. Dragović, S. (2001): *Potrebe i efekti navodnjavanja na povećanje i stabilizaciju prinosa u poljoprivrednim područjima Srbije,* Zbornik radova Instituta za ratarstvo i povrtarstvo, br. 35, str. 445-456.
6. Đorđević, B. (2009): *Korišćenje vodnih resursa,* Strategija prostornog razvoja Republike Srbije, Studijsko-analitička osnova, IAUS, Beograd.
7. Ecologic (2007): *EU water saving potential*, Part 1, Report, available at: http://ec.europa.eu/environment/ water/ quantity/pdf/water_ saving_1.pdf
8. European Environment Agency – EEA (2012): *Towards efficient use of water resources in Europe*, EEA Report, No. 1/2012.
9. Garces-Restrepo, C., Vermillion, D., Muñoz, G.(2007): *Irrigation Management Transfer. Worldwide efforts and results,* FAO Water Reports: 32, Rome.
10. Gavrilović, V. (2012): *Bruto marže 2012,* Poljoprivredna stručna služba Negotin d.o.o., Negotin, Interna dokumentacija.
11. Hadžić, V., Nešić, Lj., Belić, M., Furman, T., Savin, L. (2002): *Zemljišni potencijal Srbije,* Traktori i pogonske mašine, vol. 7:4/2002, pp. 43-51.
12. Institut za vodoprivredu “Jaroslav Černi” - IJČ (2001): *Vodoprivredna osnova Republike Srbije,* IJČ, Beograd.
13. IPCC (2007): *Climate Change 2007: Impacts, Adaptation and Vulnerability. Working Group II Contribution to the IPCC Fourth Assessment Report. Summary for Policymakers,* IPCC, Brussels.

14. IPTRID/FAO-AGLW Collaborative Initiative (2002): *Survey on modernization of irrigation schemes,* available at: http://www.fao.org/nr/water/topics_irrig_modernis. html

15. JVP "Srbijavode" (2014): *Program poslovanja za 2014. godinu*, Beograd.

16. JVP "Srbijavode" (1996): *Hidrosistem za navodnjavanje dela Negotinske nizije korišćenjem postojeće pumpne stanice IHP "Prahovo",* Idejni i glavni projekat, Beograd.

17. Maksimović, L., Dragović, S. (2004): *Water requirements of field crops and effects of irrigation,* Acta biologica Iugoslavica - serija A: Zemljište i biljka, vol. 53, no. 2, pp.85-92.

18. Ministry of Environment and Spatial Planning - MESP (2010): *Initial National Communication of the Republic of Serbia under the United Nations Framework Convention on Climate Change,* MESP, Beograd.

19. Nikolić, M., Popović, V. (2010): *The Possibility of Safe Food Production in Protected Areas,* XIV International Eco-Conference, September 2010, Proceedings, Ecological Movement of Novi Sad, pp. 199-206.

20. Obradović, D., Teofanović, Ž., Petrović, P., Petrović, M., Ružičić, L. (2012): *Značaj i uticaj navodnjavanja na naturalni i ekonomski efekat poljoprivrednih prinosa,* Traktori i pogonske mašine, Vol. 17, br. 5, str. 46-53.

21. Popović, V, Sarić, R., Jovanović, M. (2012): *Sustainability of Agriculture in Danube Basin Area,* Economics of Agriculture, Vol. LIX, No.1, pp. 73-87.

22. Popović, V., Živanović Miljković, J. (2012): *Wine Tourism and Sustainable Rural Development in the Danube Basin Area in Serbia,* International Scientific Meeting Sustainable agriculture and rural development in terms of the Republic of Serbia strategic goals realization within the Danube region - preservation of rural values, Tara, December 2012, IAE, Belgrade, Thematic proceedings.

23. Republički zavod za statistiku - RZS (2014): *Navodnjavanje u Republici Srbiji, 2013,* Prethodni rezultati, Saopštenje br. 099, God. LXIV, 25.04. 2014.

24. Republički zavod za statistiku - RZS (2011-2013): *Opštine i regioni u Republici Srbiji 2011-2013,* RZS, Beograd.

25. Republički zavod za statistiku - RZS (2013a): *Popis poljoprivrede u Republici Srbiji 2012,* Baza podataka, available at: http://popispoljoprivrede.stat.rs/popis/wp-content/themes/popis2012/sadrzajcir.htm

26. Republički zavod za statistiku (2011): *Popis stanovništva, domaćinstava i stanova u Republici Srbiji 2011,* Prvi rezultati, Bilten 540, Beograd.

27. Republički zavod za statistiku (2007-2010): *Opštine u Srbiji 2006-2009,* RZS Beograd.

28. SO Negotin (2012): *Strategija održivog razvoja opštine Negotin za period 2012-2021. godine,* SO Negotin, Srbija.

29. SO Negotin (2005): *Program razvoja opštine Negotin za period 2005-2010. godine,* SO Negotin, Srbija.

30. Subić, J., Ivanović, L., Jeločnik, M. (2010): *The impact of incentives on the cover variable costs in the production of field crops,* PKB Scientific Meeting, Proceedings, Vol. 16, no.1-2, pp. 251-264.

31. Svendsen, M., Turral, H. (2007): *Reinventing irrigation,* In Molden, D., ed. Water for food, water for life: A Comprehensive Assessment of Water Management in Agriculture, London, UK: Earthscan; Colombo, Sri Lanka: IWMI, pp. 353-394.

32. The World Bank (2014): *Irrigation&Drainage Rehabilitation Project (Serbia): Implementation Status & Results*, Report No: ISR 13788, 29-Mar-2014, Final Project Implementation Status Report.

33. Tusa, C., Paraschiv, D., Badulescu, F., Redulescu, A. (2007): *Experiences on Water Users' Associations Development in Romania,* In Hussain, I., Zeeshan, N, eds., Water Users' Associations Development in Southeastern European Countries*:* Regional Workshop on WUAs Development, June, 2007, Bucharest, Proceedings.

34. UN (2011): *Water and Agriculture in the Green Economy,* Information Brief, United Nations Office to support the International Decade for Action 'Water for Life' 2005-2015/UNW-DPAC.

35. Vermillion, D., Sagardoy, J. A. (1999): *Transfer of irrigation management services, Guidelines,* FAO Irrigation and Drainage Paper no. 58, FAO, Rome.

36. Wolters, H. W., Burt, C. M. (1997): *Concepts of Modernization,* In Modernization of Irrigation Schemes: Past Experiences and Future Options, FAO Water Reports: 12, FAO, Rome.

DOGRADNJA SISTEMA ZA NAVODNJAVANJE NEGOTINSKE NIZIJE[11]

Vesna Popović[12], Nataša Kljajić[13], Jonel Subić[14]

Rezime

Prema FAO konceptu modernizacije navodnjavanja, da bi bio rentabilan, sistem za navodnjavanje mora biti zasnovan na poboljšanoj efikasnosti, smanjenju operativnih troškova i troškova održavanja, i unapređenom povraćaju troškova zasnovanom na rastućoj produktivnosti u poljoprivredi, uz posvećivanje dužne pažnje institucionalnim i zakonodavnim pitanjima i zaštiti životne sredine. Uspešna modernizacija sistema za navodnjavanje pretpostavlja sveobuhvatnu analizu faktora koji vode modernizaciji.

Koristeći IPTRID/FAO-AGLW metodološki pristup za analizu faktora modernizacije sistema za navodnjavanje, autori u radu razmatraju tehničke, socio-institucionalne, ekonomsko-finansijske i ekološke uslove za dogradnju sistema za navodnjavanje u Negotinskoj niziji i daju određene preporuke za uspešnu realizaciju ovog projekta, na osnovu međunarodnih i regionalnih iskustava u ovoj oblasti, prilagođenih specifičnostima lokalne poljoprivrede i ruralnih zajednica.

***Ključne reči**: modernizacija sistema za navodnjavanje, profitabilnost poljoprivrede u uslovima navodnjavanja, udruženja korisnika voda.*

11 Rad predstavlja deo istraživanja u okviru projekta III 46006 – Održiva poljoprivreda i ruralni razvoj u funkciji ostvarivanja strateških ciljeva Republike Srbije u okviru Dunavskog regiona, finansiranog od strane Ministarstva prosvete, nauke i tehnološkog razvoja Republike Srbije u projektnom periodu 2011-2014.

12 Dr Vesna Popović, naučni savetnik, Institut za ekonomiku poljoprivrede, Volgina 15, 11060 Beograd, Srbija, Telefon: +381 11 6972 858, E-mail: vesna_p@iep.bg.ac.rs

13 Dr Nataša Kljajić, naučni saradnik, Institut za ekonomiku poljoprivrede, Volgina 15, 11060 Beograd, Srbija, Telefon: +381 11 6972 858, E-mail: nataša_k@iep.bg.ac.rs

14 Dr Jonel Subić, viši naučni saradnik, Institut za ekonomiku poljoprivrede, Volgina 15, 11060 Beograd, Srbija, Telefon: +381 11 6972 858, E-mail: jonel_s@iep.bg.ac.rs

Review Article

Economics of Agriculture 3/2014
UDC: 338.435 EU

THE COMMON AGRICULTURAL POLICY THROUGH REFORMS TOWARD EUROPE 2020

Goran Puzić[1], Aleksandar Klevernić[2], Zoran Pavlović[3]

Summary

At the start of the European integration process, although the focus was on the European Coal and Steel Community, the specific treatment of agriculture was well-known information. Often, the agricultural sector was the decisive factor in the dynamics and intensity of the integration process as a whole. That role of agriculture is maintained, but in a lot of changed conditions and with different strategy that includes the development of new targets and mechanisms. The Common Agricultural Policy (CAP) has more than 50 years one of the most expensive and the most intriguing of all EU policies. It, beside regional policy, is a key policy and many aspects of other policies of EU are diffracted on this topic. The aim of this research is the intersection of the previous reforms of the CAP until the Agenda "Europe 2020" and influence on the agricultural income and direct payments on selected countries – Bulgaria, Romania and Croatia. During research, we have used the methods of economic and political analysis and comparative-historical and current structural and dynamic context of the EU.

Key words: *Common Agricultural Policy, EU, CAP reforms, Europe 2020.*

JEL: *Q18.*

Introduction

The CAP is one of the most controversial and the oldest policies of EU. For this claim there are several reasons: Firstly, agriculture has always been an essential factor in economics, social and cultural life of the people. Secondly, farmers from Europe had, and still have, a huge political influence in all parliamentary regimes within democratic systems of Europe. As a third, and maybe the most important, after the Second World War, one of the main

1 Goran Puzić, Ph.D., Associate Professor, Megatrend University, Faculty of Law, Public Administration and Security, Bulevar umetnosti 29, 11070 Novi Beograd, Serbia, Phone: +381 65 208 19 77, E-mail: gpuzic@megatrend.edu.rs

2 Aleksandar Klevernić, M.Sc., Vulcascot Ltd., Vladimira Nazora Street BB, 22400 Ruma, Serbia, Phone: +381 65 252 77 29, E-mail: a.klevernic@vulcascot.rs

3 Zoran Pavlović, Ph.D., Associate Professor, University Business Academy, Faculty of Law, Geri Karolja Street 1, 21000 Novi Sad, Serbia, Phone: +381 65 8677 949, E-mail: zoran.pav@hotmail.com

strategic objectives of the European countries was to achieve and guarantee the safety of food supply for the entire population as soon as possible. Thus, the dynamics of the CAP has significantly influenced on dynamics of the European Communities.

The establishment and development of the CAP

The beginning of the CAP is linked to the 1950s in Western Europe, whose societies was drastically damaged by years of war, whose agriculture was practically "crippled" and where it was not possible to guarantee enough food for all (Zobbe, 2001). The original aim of the CAP was to encourage the production of food so that consumers had a stable supply, and to provide stable agricultural sector for former European Community (European Commission, 2011). Prior to establishment of the CAP, the first time since 1870s and the Franco-Prussian war, all countries are turning to protectionism as a common denominator of national policy at that time, including the traditional British (Miščević and Dragojlović, 2010). In accordance with that time, the agriculture on the level of national countries has largely been subsidized by the state, as the majority of the population in pre-industrial period was engaged in this activity[4]. Subsidies were related to the addition to the market price, import quotas on foreign goods, direct payments to the farmers (which is still the most attractive item of the CAP) support of research and production of new species (which is the characteristic of wealthier countries in Europe). There are different opinions regarding the origin of the CAP. One of the most interesting positions is related to the alleged deal between France and Germany. Namely, during the 50's, France in exchange for opening their market for industrial goods from Germany, asked for a counter service in the form of the opening of the German market for agricultural products from France (Prokopijević, 2009). This attitude is the product of hypothetical reasoning which is not completely followed with the facts and appropriate documents by the authors who have advocate this position (Hiks, 2007). On the other hand, the undeniable fact was that the price-standard for agricultural market protection was adopted from Germany, which was higher than the French one. From this point of view, France has achieved benefit, since the burden of its budget was transferred to the central budget of EEC which was mainly funded by Germany and Netherland. All Western European countries (except the United Kingdom) had a significantly inefficient agricultural sector regarding to USA, as there was a strong pressure of agricultural products from the States to European agricultural market. Unification of protectionist policies within agriculture, created a sanctuary for all Western European agriculture, and at the same time there was also an initial step towards to creation of the CAP. Especially importance for establishing this policy we can find in Treaty of Rome which gives to agriculture the major role and in Summit in Stresa at 1958 which included the common market for agricultural products, the priority of Community domestic production over imports and centralized finance of the CAP[5].

4 On this way, the state has contributed to a significant price increase of foreign goods on domestic market, and thus accounted for much less competitive according to the others, and on the other hand favored domestic producers and narrowing the area for the customers in wider choice and better range of the goods.

5 Implies the transfer of funding from national level to the Comunity.

Chronological development review of CAP can be summarized as follows:

Period from the beginning till the sixties in the 20th century.

- Initial establishment of the CAP

Period 1960 – 1980.

- The period of overall productivity and high investments level in CAP (in 1984. almost 70% of the EEC budget was related to the CAP).

Period 1980 – 1990.

- Dealing with market surpluses and the first attempts to decrease CAP participation within EEC budget.

Period from Maastricht until 2004.

- Implementation of direct payment policy and the beginning of the establishment of rural development policy.

Period from 2005.→

- Implementation of the single payment scheme and the payments separation from the production of certain crops (Miščević and Dragojlović, 2010).

The CAP reforms

This policy has practically come to life in 1962 when the country members of the former EEC started to apply CAP[6]. In the same year, they formed the European Agricultural Guarantee Fund (EAGF), who has supported since 1964 guarantee prices on the market from one side, and from the other has supported the structural reforms of the national agricultural policy. The result of this policy was the creating of market surplus and the higher price level on the EEC market relative to the world agricultural scene. This development has contributed to the first reform of the CAP which is perhaps the most far-reaching one. It is the *Mansholt plan* (*Sicco Mansholt*, former Commissioner of Agriculture) which are predicted the reduction of arable land for about 5 million hectares, revision of price policy, increasing the farm size and their production specialization (Prokopijević, 2009). This reform was not initially accepted because it was considered as a too radical, and because it would lead to restructuring of agriculture continuing with the retrain of workers, retirements and urbanization of a large part of the population[7]. The plan was partially accepted. The next reform was carried out in 1988 as a *MacSherry reform*[8] when they introduced two institutes of fundamental importance: „leaving aside“ and direct payments. Leaving aside means the un-treatment of a certain

6 France, Western Germany, Benelux and Italy.

7 The fact is that during this period, a huge number of the EU population was oriented to the agricuture. Accordingly, we should not forget that the CAP has enormously contributed to the farmer „yes“ for integration process.

8 Ray MacSherry, former European Commissioner of Agriculture.

part of the land in order to reduce the production and to avoid redundancies. This institute was soon abandoned, given that there has been an increase in imports and the potential risk to environment (excessive use of chemicals). The direct payments were introduced as a replacement. That institute (direct payments) has become the main form of agricultural financing, because they enabled the successful functioning of economic paradox: low prices of agricultural products, in order to be closer to global price level, together with unchanged production quantities. The logical economic effect on the decline in price of the product will be decreasing of produced quantities. However, the CAP is through direct payments providing that the outcome of the logic "*going to the mill*" of the producers, via covering the income that is lost due the lower prices (Pezaros, 1999). This type of compensation initially paid per hectare, and later the practice was changed (Knizkel et al, 2009). The point of all changes during the 80's was to reduce subsidies on production and the production thereby drastically reduced, in order to avoid an increase in imports. In this way an attempt was to prevent the creation of surplus of agricultural products (Prokopijević, 2009).

With reform "Agenda 2000" from 1999 EU introduced the European model of agriculture based on the following elements:

- Competitive agricultural sector;
- Production focused on quality products and environmental protection;
- Diversification of agriculture;
- Active rural community;
- Reasonable and unique agricultural policy based on responsibility separation between EU and country members;
- Clear benefits to society of the money spending on agriculture (Miščević and Dragojlović, 2010).

Specific treatment of agriculture is logical if we considered that the food is essential factor for human survival. Therefore, protective measures are necessary (Marković and Marković, 2014). Within the CAP was introduced the pillar structure of agriculture: market support through guaranteed prices system and rural development. Over the time, the guaranteed prices of certain products have decreased, but the compensations to producers were still withheld. The EU also introduced the institute of „cross-conditionality "which is related to the environment protection and food quality as a condition for right on a direct payment consummation. Rural development policy has entailed strengthening of agricultural sector, environmental protection and modernization of rural areas. One of the recent reforms of this policy was introduced in the year 2003 and this reform was the base for the further development of agricultural policy. *Single payment scheme* was the part of the mentioned reform. Namely, in order for manufactures to be able to receive mentioned payment benefits, it was necessary to fulfill following conditions: that in the reference period they have already used grant subsidies, to meet the standards of the environment, public health and health of domestic animals and to provide the protection of the land in arable state. All of these conditions are related to the 2 required groups: statutory management requirements and

keeping the land in good condition in accordance with clean environment. Although these goals were tied to draw closer market reality to the farmers in order to prepare them for the future competition, however, the CAP has remained a big dose of protectionism (export subsidies, leaving aside, emergency supplies) and market state management. The aim of the previous reforms was to reduce the participation of the CAP within EU budget[9], to increase the competitiveness of the agriculture at the global market, and to continuously improve the food quality and agricultural production, but not on the cost of environmental damaging and human health.

Before of the inclusion of a new member states at 2004[10]. EU attempted another reform which was initiated by EU15[11]. The main goal of this reform, which was initiated by Commissioner of Agriculture - Franz Fischler, was to limit the outflow from the old to the new members. The plan was to reduce direct payments for 3% starting from 2004 (Prokopijević, 2009) and that the saved funds qualify for the rural development (besides decreasing of the guaranteed prices). The funds are directed to the villages in order to motivate the farmers in terms of performing of non-agricultural activities. This was particularly true in the improvement of environmental standards in order to reduce the pollution of the environment and the food production.

The entry of the 10 new EU countries has nearly doubled agricultural labor and arable land, which has made a serious pressure on the CAP (van Berkel and Verburg, 2011). During the pre-accession negotiations, agriculture was comprised mostly of directives and other legal acts. For new members, EU has provided gradually joining to the system of direct payments, which covered the period 2004-2013, where 2013. presents the final year of full implementation to the system.

All these CAP reforms have caused determination of the agricultural prices by the free market. This means that the CAP is no longer deals with resource allocation and market stabilization. Now he has two new roles:

- The CAP has become a liberal welfare regime (according to *Esping-Andersen* typology), which means that the public programs are funded through taxation and that the social benefits are reserved for low income farmers;
- With more attention on environmental issues, rural development and food security, the CAP aims to become a general public policy in interest of all nations within EU.

Europe 2020

Treaty of Lisbon or Reform Treaty was signed by the EU members on 13th December 2007 and entered into force on 1st December 2009. In this process, the former Treaty of

9 The current figure is 41% of EU budget, which is success, since the beginning of the European integration was even 74%.

10 The largest territorially expansion of the EU. „Big Bang" policy has covered the entry of Estonia, Latvia, Lithuania, Malta, Cyprus, Poland, Czech Republic, Slovakia, Hungary and Slovenia.

11 First 15 EU member states.

Rome was renamed to Treaty on the Functioning of the European Union. The most profited institution with Treaty of Lisbon are European Parliament (extension of jurisdiction in decision making process) and European Council (assume the certain responsibilities of the Commission, institute of President, etc.), and one of the main novelty is that the draft version of Constitution envisaged abolition of previous treaties, while Lisbon these old treaties just changing, not repealing. Treaty on the Functioning of the EU, compared to the previous contracts, exerts less formal changes in terms of agriculture: Articles 32-38 according to the new Treaty are Articles 38-44 and introduce the concept of "international market" instead of common market (Miščević and Gavrilović, 2010). Additionally, the Treaty did not separate a common policy of the CAP in terms of fishing, neither the major shift in terms of adjusting the goals and founding principles of the CAP to the new citizens demands in terms of agricultural activities, especially in following: sustainable development, product quality, public health and customer protection, rural development and consolidation of multifunctional agriculture all over the EU and finally, contribution of agriculture in climate changing. Although at first seems superficial, the Treaty of Lisbon will certainly cause a major changes within the CAP, especially in terms of legislation, executive and financial levels (European Commission, 2012a).

The agriculture is certainly an integral part of the European economy and society. In terms of indirect effects, each stumble of European farmer is reflected on the employment scale in economic sector, especially in the agro-food chain which is related on the primary agriculture production. Sectors like a rural tourism, transport, etc. would also be affected by these deviations. According to this report, it is necessary to reform the CAP and to continue in direction of bigger market competitiveness and better fund utilization received from tax payers.

The three main objectives of the CAP within the project "Europe 2020" is:

1. Sustainable food production

The main role of agriculture is food supplying. For the highly competitive food industry, it is necessary to have a strong agricultural sector which will provide the following:

- Contribution to the farmer income and minimal variation of the revenue, noting that the volatility of the price, income, natural risks, and the level of profitability in agriculture, in average, is poorer than the rest of the economy;
- Production compensation in the areas that is naturally limited, since in such regions the risk of leaving the country is on the higher level than usual.

2. Sustainable management of national resources and actions on climate change

- To foster the "*green growth*" through innovation which requires adoption of new technologies, new products development, changes to existing manufacturing processes and support new patterns of demand, particularly in the context of the bio economics emergence (Rametsteiner et al., 2011);

- To reduce the effects caused by climate change and adopt the actions that are necessary to make agriculture adequately respond to these changes.

3. Balanced territorial development

- Rural employment supports the social structure maintenance of rural areas;
- Rural economy improvement and promotion of diversification is to enable the local stakeholders to fully exploit the potential and to optimize the use of limited local resources (European Commission 2012b).

Table 1. Agricultural income in the EU (period 2014-2023)

Group/ Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Factor income in nominal terms										
EU28	110,6	115,1	115,1	114,3	116,1	117,8	116,0	115,2	115,5	114,7
EU15	105,8	109,7	109,7	108,7	110,1	111,6	109,9	109,0	109,3	108,5
EU-N13	140,6	148,5	148,2	148,9	152,9	155,6	154,1	153,8	153,9	153,2
Factor income in real terms										
EU28	96,7	98,9	97,1	94,6	94,3	93,9	90,8	88,5	87,1	84,9
EU15	94,9	96,9	95,2	92,6	92,1	91,7	88,6	86,3	85,0	82,8
EU-N13	107,5	111,4	108,7	106,9	107,4	107,1	103,9	101,6	99,6	97,1
Labor input										
EU28	76,5	74,1	71,8	69,5	67,4	65,3	63,3	61,4	59,5	57,7
EU15	84,0	82,4	80,8	79,3	77,7	76,2	74,7	73,3	71,9	70,5
EU-N13	69,9	66,9	63,9	61,1	58,5	55,9	53,5	51,1	48,9	46,7
Agricultural income in real terms per labor unit										
EU28	126,3	133,4	135,1	135,8	139,8	143,5	143,2	143,9	146,0	146,8
EU15	112,9	117,5	117,7	116,7	118,5	120,3	118,5	117,7	118,2	117,5
EU-N13	153,3	166,1	169,5	174,3	183,2	190,9	193,7	198	203,1	207,1

Source: European Commission, 2013a.

According to period 2014-2023, the agricultural income per labor unit is projected to be 46.8% above the period 2003-2007, which is an increase of 1,8% per year (Table 1). The main reason in this positive trend, we can find in continuous decrease of the labor force in agriculture: from 76,5 to 57,7 (European Commission, 2013a). Inside of EU28, EU15 is expected to increase by 17,5% by 2023 compared to the 2003-2007 average, whereas in the EU-N13 it more than doubled. As a result, the gap between the absolute levels of agricultural income per worker in the EU15 and the EU-N13 will narrow further but still with appreciably difference. The EU-N13 will continue with adjustments of agricultural workforce and that policy will consequent in the income development deference regarding to EU15.

Real agricultural income per labor unit in the EU-28 is not expected to follow a steady pattern. In 2014 producer prices are expected to decrease, especially for crops (-11.2%). The fall in the value of production is offset by a sharper decrease of the intermediate costs, which are driven by the lower expenditure on feed, energy and fertilizers, and result in an increase in nominal income. In 2015, the value of production is expected to develop steadily, while intermediate

costs would continue to decline, causing income to rise in both nominal and real terms. After a period of stable nominal total factor income, income should rise again in 2018 and 2019 due to increasing prices for most commodities (especially for pork). In the last four years of the projection period volumes produced increase slightly for all products. Producer prices raise moderate for crops and meat whereas producer prices for milk are expected to decrease. Given the assumed increase in energy and fertilizer prices, intermediate costs will continue to rise, and together with the rising fixed capital consumption, outweigh the increase in the value of production so that total factor income in nominal terms decreases between 2019 and 2023 (European Commission, 2013a).

According to EU Regulation from 17th December 2013 (European Parliament, European Council, 2013b) the new rules for direct payments will be established for all Members States. In this paper, we single out the 3 last one – Romania, Bulgaria and Croatia.

Table 2. Direct payments in 2015. for Bulgaria and Romania

Element	Bulgaria	Romania
Amounts for applying point (a) of Article 10(1) and for calculating the national ceilings for payments referred to in Article 16 in 2015:	EUR 790.909.000,00	EUR 1.783.426.000,00
Total amount of complementary national direct payments to the basic payment scheme referred to in Article 18(1) in 2015:	EUR 69.657.000,00	EUR 153.536.000,00
Total amount of complementary national direct payments to the crop-specific payment for cotton referred to in Article 18(2) in 2015	EUR 258.952,00	/

Source: European Parliament, European Council, 2013b.

In Bulgaria and Romania, for the year 2015, the amount claimed or due to be granted as referred to in Regulation (EU) No 1307/2013 shall be calculated on the basis of the relevant amount set out in the table 2. Beside direct payments from the EU budget, Bulgaria and Romania can use national direct payments as additional force under the basic payment scheme and crop specific payment for cotton. On this way they can boost the national agriculture and to catch up the States from the EU15. The total amounts of those payments shell not exceed programmed amounts which are set out in the table 2. All granted payments need to be in accordance of objective criteria in order to provide equal treatments of the farmers, and to avoid unfair competition and distortion on the market (European Parliament, European Council, 2013). In case of Croatia, European Commission will grant the national direct payments which will be suitable for necessary developments within the CAP under the same conditions like for the Bulgaria and Romania – equal treatment of farmers and avoiding of potential distortion on the market. The Croatia will have one more additional term – to submit the report on the measures for the implementation of the complementary national direct payments (number of beneficiaries, hectares which are covered with national direct payments, covered livestock, etc.). On this way, the EU will try to give a space for Croatia supervised development. This is very important if we consider current state of the Croatian

agriculture and the policy of the liberal market inside the EU. Also, almost the only instrument which Croatia used successfully is direct payments (Vapa Tankosić and Stojsavljević, 2014). Direct payments in Croatia, shall be introduced in accordance with the following schedule of increments expressed as a percentage of the corresponding) level of the direct payments as applied from 2022 (Table 3).

Table 3. Direct payments in Croatia (available 373 mil EUR)

2014	2015	2016	2017	2018	2019	2020	2021	2022
30%	35%	40%	50%	60%	70%	80%	90%	100%
-	242.450	223.800	186.500	149.200	111.900	74.600	37.300	-

Source: European Parliament, European Council, 2013b.

Conclusion

The CAP has been almost 50 years one of the most expensive EU policies. It talks about its importance, not only for farmers and citizens of the Union, but also for the development of EU integration in general. The fact is that in 1962 participation of the population in agriculture was much higher than today, and at that moment the developing of European idea needed to be supported by European farmers. It was completed through the CAP, which at that time was more than 70% of the EEC budget. This policy was suitable for the France because of the large agricultural sector and because of the finance centralization via EEC budget which was mainly stuffed with the money from Germany and Netherlands. Germany also finds its benefit: after turbulent period it managed to become a part of an international organization and on the other side, it opens the bigger market for German industrial products. The CAP as it is still causes a lot of controversy within the EU institutions. On one side we have lobby groups that are committed to maintaining a highly protected policy in agriculture, and the other liberal economists who cannot accept such concept of protectionism. Although the current CAP is quite expensive for the EU budget, it can be said that it has experienced some decline in dominance as a primary policy in the EU. The facts that confirm this claim are that the CAP at the beginning of European integration participates with 73% of the EEC budget, and the budget projections for 2014 provide "only" 33%. The CAP itself has several drawbacks: spoiled farmers (read land owners) because of the huge protectionism, the CAP usefulness for all EU citizens are still under the question, there is major price disruptions, huge surpluses, unfairness in value allocation (large farmers get richer – small ones get poorer), distortion on global market, etc. The CAP drastically protects the farmers through subsidies, guaranteed prices, etc. and on that way favors the domestic producers according to foreign farmers. The results of such guarantees are huge surpluses, which have to be placed somewhere and the selection of the most fall on the African countries, Jamaica and similar. Such policy on the economically divested countries affect the breakdowns of the companies (who employing the 1.000 peoples) and households, which implies in increasing of unemployment. The question is what would happen if, within the CAP, the protectionism doesn't exist? Or if the EU cuts the benefits on much lower level? It is clear that European countries have ideal conditions for agriculture, such as climate conditions and arable land quality. But without such favoritism

which they have today, their competitiveness will be highly questionable, primarily because of the high value products and expensive labor power. The second question is what is the real importance of the CAP in the general population of the EU? On this question the agricultural lobbyists have to provide arguments and extensive explanation. However, the "urban voters" mostly pay for this policy because they want quality and price available products. Presumably, the cheaper food will come when the EU borders become more opened for non-EU products, and when EU lowered the tariffs in order to increase competitiveness. Also, the EU needs to become an institution that establishes the rules without favoritism of the domicile producers. On that way, the people who finance the CAP will be winner – citizens and consumers.

References

1. European Commission (2011): *Common Agricultural Policy towards Europe 2020 Assessment of Alternative Policy Options, a*vailable at: ec.europa.eu/agriculture/policy-perspectives/impact-assessment/cap-towards-2020/report/full-text_en.pdf
2. European Commission (Agriculture and Rural Development), (2012a): *The Common Agricultural Policy – A partnership between Europe and Farmers*, Publication Office of the European Union, Luxembourg.
3. European Commission (2012b): Communication From The Commission To The European Parliament, The European Council, The Council, The European Central Bank, The European Economic And Social Committee The Committee Of The Regions And The European Investment Bank - Action for Stability, Growth and Jobs, Brussels, 30.05.2012. COM(2012), 299 final, available at: http://eurlex.europa.eu/legalcontent/EN/TXT/PDF/?uri=CELEX:52012DC0299&from=EN
4. European Commission (Agricultural and Rural Development), (2013a): *Prospects for Agricultural Markets and Income in the EU 2013-2023,* available at: http://ec.europa.eu/agriculture/markets-and-prices/medium-term outlook/2013/fullrep_en.pdf
5. European Commission (Agricultural and Rural Development), (2013b): Regulation (EU) No 1307/2013 of the European Parliament and of the Council of 17th December 2013 „Establishing rules for direct payments to farmers under support schemes within the framework".
6. Hiks, S. (2007): *Politički Sistem Evropske Unije,* II izdanje, Službeni glasnik, Beograd.
7. Knizkel, K., Brunori, G., Rand, S., Proost, J. (2009): *Towards a Better Conceptual Framework for Innovation Processes in Agriculture and Rural Development: From Linear Models to Systemic Approaches*, Journal of Agricultural Education and Extension, Vol. 15, no. 2, pp. 131-146.
8. Marković, I., Marković, M. (2014): *Agricultural Protectionism of the European Union in the Conditions of International Trade Liberalization*, Economics of Agriculture, Vol. 61, no. 2, IAE Belgrade, pp. 423-440.
9. Miščević, T., Dragojlović, N. (2010): *Vodič kroz EU politike – Poljoprivreda,* Evropski pokret Srbija, Beograd.

10. Miščević, T., Gavrilović, S. (2010): *Ugovor iz Lisabona - sigurna luka ili početak novog putovanja?,* Službeni Glasnik: Fondacija Fridrih Erbert, Beograd.
11. Pezaros, P. (1999): *The Agenda 2000. CAP reform agreement in the light of the future EU enlargement,* Working Paper 99/W/02, European Institute of Public Administration - EIPA, Maastricht.
12. Prokopijević, M. (2009): *Evropska unija – uvod,* II dopunjeno izdanje, Službeni Glasnik, Beograd.
13. Rametsteiner, E., Puelzi, H., Alkan Olsson, J., Frederiksen P. (2011): *Sustainability indicator development – Science or political negotiation?* Elsevier Ltd., Ecological Indicators, Vol. 11, no. 1, pp. 61-70.
14. Van Berkel, B. D., Verburg, H. P. (2011): *Sensitizing rural policy: Assessing spatial variation in rural development options for Europe*, Elsevier LTD., Land use policy, Vol. 28, no., pp. 447-459.
15. Vapa Tankosić, J., Stojsavljević, M. (2014): *EU Common Agricultural Policy and Pre-Accession Assistance Measures for Rural Development*, Economics of Agriculture, Vol. 61, no. 1, IAE, Belgrade, pp. 195-201.
16. Zobbe, H. (2001): *The Economic and Historical Foundation of the Common Agricultural Policy in Europe*, 4th European Historical Economics Society Conference, Oxford-United Kingdom: Merton College.

ZAJEDNIČKA POLJOPRIVREDNA POLITIKA KROZ REFORME KA EVROPI 2020

***Goran Puzić*[12], *Aleksandar Klevernić*[13], *Zoran Pavlović*[14]**

Rezime

U startu evropskog integracionog procesa, iako je akcenat bio na Evropskoj zajednici za ugalj i čelik*, poznata je informacija da je u ovom procesu poljoprivreda imala specifičan tretman. Ne retko, poljoprivredni sektor bio je i opredeljujući faktor dinamike i intenziteta integracionih procesa u celini. Ta uloga ni sada ne izostaje, ali u dosta izmenjenim uslovima i strategijom koja sadrži nove razvojne ciljeve i mehanizme. Zajednička poljoprivredna politika je duže od 50 godina jedna od nasjkupljih i najintrigantnijih politika EU, kako za poljoprivrednike i građane, tako i za EU integracije uopšte. Ona, pored Regionalne politike, predstavlja ključnu politiku EU i mnogi aspekti EU politika se prelamaju na ovoj temi. Cilj ovog istraživanja je presek dosadašnjih reformi Zajedničke poljoprivredne politike do nove Agende „Evropa 2020", kao i njen uticaj na dohodak i politiku direktnih plaćanja u poljoprivredi Bugarske, Rumunije i Hrvatske. U toku istraživanja ovog rada koristili smo metode političko-pravno-ekonomske analize u strukturno-dinamičkom kontekstu političkog sistema EU pre i nakon usvajanja Lisabonskog ugovora.*

Ključne reči*: *Zajednička poljoprivredna politika, EU, Reforme ZPP, Evropa 2020.

12 Prof. dr Goran Puzić, Vanredni profesor, Megatrend Univerzitet, Fakultet za pravo, javnu administraciju i bezbednost, Bulevar umetnosti 29, 11070 Novi Beograd, Srbija, Telefon: +381 65 208 19 77, E-mail: gpuzic@megatrend.edu.rs

13 Aleksandar Klevernić, M.Sc., Vulcascot d.o.o., Vladimira Nazora BB, 22400 Ruma, Srbija, Telefon: +381 65 252 72 79, E-mail: a.klevernic@vulcascot.rs

14 Prof. dr Zoran Pavlović, Vanredni profesor, Pravni fakultet za privredu i pravosuđe, Univerzitet privredna akademija, Geri Karolja 1, 21000 Novi Sad, Srbija, Telefon: +381 65 8677 949, E-mail: zoran.pav@hotmail.com

Review Article

Economics of Agriculture 3/2014
UDC: 338.435(497.11):EU

QUALITATIVE AND QUANTITATIVE ANALYSIS OF MICRO AND MACRO ASPECTS OF AGRICULTURAL FINANCE

***Branislav Veselinović*[1], *Maja Drobnjaković*[2]**

Summary

The epicenter of this analysis is to provide an overview of the current situation in micro and macro agricultural finance in Serbia and the EU. One of the goals of this research is to consider the weaknesses and potentials of agricultural policy in Serbia, through comparison with more developed countries. In this qualitative and quantitative analysis, authors used comparation method, analysis and synthesis method, inductive and deductive method, and a local and international literature review. There are several important conclusions which can be drawn from this manuscript. Access to finance among farmers and agricultural SMEs is among the poorest of any sector in Serbia. The Serbian financial sector offers a poor range of loan products to the agricultural sector. Therefore, existing mechanisms for micro and macro agricultural finance in Serbia are not adequate and a change should be made in approach.

***Key words*:** *agriculture, finance, Serbia, EU, harmonization.*

JEL: *F15, F36, Q14.*

Introduction

For the past decades, Serbian agriculture cannot keep pace with the agricultural development of the developed West European countries- neither in technical/technological, nor organizational aspect (Pejanović et al., 2006). The same can be said of its overall efficacy and productivity. Consequences of a long-term disinvestment in the agricultural sector are more pronounced than ever (Babović and Veselinović, 2010). Observing the current situation, credit support to the agriculture of Serbia through the banking sector is extremely unfavorable. Average active interest rates in Serbia are considerable higher than average active interest rates in the European Union and neighboring countries. Especially in times of global crisis, it is extremely important to provide more favorable credit conditions and thus

1 Branislav Veselinović, Ph.D., Full Professor, The Faculty of Economics and Engineering Management – University Business Academy in Novi Sad, Cvećarska Street no. 2, 21000 Novi Sad, Republic of Serbia, Phone: +381 63 505 350, E-mail: bveselinovic@fimek.edu.rs

2 Maja Drobnjaković, M.A., Assistant, The Faculty of Economics and Engineering Management – University Business Academy in Novi Sad, Cvećarska Street no. 2, 21000 Novi Sad, Republic of Serbia, Phone: +381 64 237 60 32, E-mail: majadrobnjakovic@fimek.edu.rs

stimulate taking loans for investments in agriculture (Reyes et al., 2012). On the other hand, financial support to agriculture through the agrarian budget, even under more favorable credit conditions, is not enough for self-sustainability (Radović, 2009). Lack of financial resources is a key limiting factor of the efficient utilization of agricultural resources - in transitional countries and developed ones alike (Ciaian et al., 2010). Despite the rich tradition and natural resources, the agriculture of Serbia is financially incapable of investing in new technologies, equipment, knowledge and innovations and, consequently, its competitiveness is seriously impaired, not only in international but domestic market as well. Solution to the problem of financing agriculture implies finding the answer to the question whether Serbia chooses the strategy of self-sufficiency in food industry or perceives the development of a whole agriculture complex as export-oriented and potentially prosperous industry (Veselinović et al., 2007). Surely, financial mix in the sector of agriculture is significantly different from the financial mix in other industries, due to certain specificities (Mondelli, 2012). There are many alternative usages of financial capital and investments in agriculture should be rated as a priority in order to strengthen rural economy and help it become independent (Curtiss, 2012).

Methodology and data sources

During the analysis, authors used compilation and comparation method, analysis and synthesis method, inductive and deductive method, and desktop study. Most important aspects were presented graphically and tabular and analyzed characteristics were presented in absolute and relative numbers. Methods used are in accordance with the research goals (consider the "pros" and "cons" of agricultural policy in Serbia, through comparison with EU), so they provide a real image of the situation within the national agriculture. During the manuscript preparation, all the available data sources were used, ranging from available statistical data of the Statistic offices of Republic of Serbia and EU, current literature, scientific papers, and electronic databases. It should also be noted that the statistical evidence offered by National Statistic Offices and EU publications, related to the performances in agriculture sector, is often not up to date, methodologically and value aligned with data from other relevant sources. This is the major reason for the possible value fluctuation and deviation, particularly for data that are results of estimates.

Results – part I: agriculture policy in Serbia

With the reconstruction of credit and monetary system, which started on 24 January, 1994, the financing of agriculture from the primary emission of the National Bank of Yugoslavia was abolished with the explanation that these placements of funds affect the growth of the domicile inflation rate. Under such circumstances, it was necessary to find new modes of financing considering the specificities of agriculture. At the same time, due to the restricted amount of money, interest rates on credits granted by business banks started growing, which significantly made production more expensive and brought agricultural enterprises in a difficult financial situation. Due to the mentioned reasons, there was a need for establishing a secure and permanent source of agriculture financing, which led to the establishment of the agrarian budget, as a constituent part of the national budget.

In the year 1993, hyperinflation was recorded in domestic economy, which significantly influenced the extremely high interest rates in the financial market. According to some sources, the primary emission resources directed through selective credits to agriculture were insufficient in comparison with the needs of agriculture. These placements of funds were reduced because of the low level of rediscount and also because of the base to which it was applied (Radović, 2009). At the beginning of 1996, the agrarian budget officially became an integral part of the state budget. The agrarian budget was projected as an overall source of state support to the agricultural sector for maintaining current production levels, but also enables certain developmental initiatives of this business activity. The initial idea was for the agrarian budget to provide stimulation for the priority needs of agriculture, professional agricultural service and village revival. However, financial means that were allocated for this purpose were simply not sufficient.

As it was previously mentioned, the agricultural credit market cannot operate without state intervention, not even in the economically developed countries. We can draw a few general conclusions, from the analysis of these state interventions:

- Most transitional countries introduced some form of government guarantees, wishing to stimulate crediting of the agricultural sector,
- Most transitional countries increased the level of subsidized credits,
- A certain number of transitional countries established specialized agricultural banks, which were later privatized and got the permission to get diversified (in most cases, governments used these institutions for directing subsidized short-term credits, with gradual change of orientation towards giving guarantees throughout the financial sector).

The effects of such government interventions were the following:

- Credit subsidies do not stimulate greater availability of credits, if the question of collateralization has not been appropriately resolved,
- Indebtedness of the agricultural sector in transitional countries continuously increased, rather than decreased, as it had been expected, thus inducing a higher degree of government interventions in the credit market ("vicious circle"),
- Once undertaken government interventions show a repeating tendency

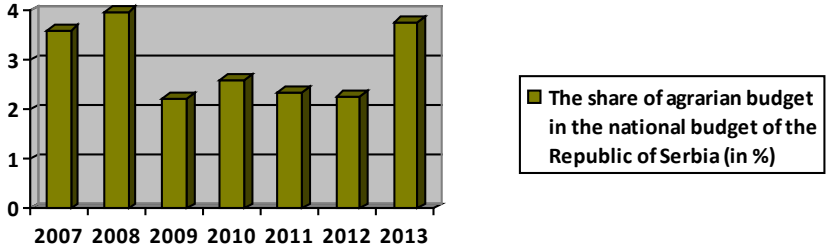
When analyzing and comparing the results of state interventions within the financial market, it is important to acknowledge the fact that the highest percentage of these programs essentially tries to treat the symptoms rather than causes of problems. The problem of financing agriculture appears as a reaction to unfavorable macro-economic situation (inflation, public debt, and foreign trade deficit), inappropriate land regulations, lack of effective economic market and amount of transaction costs due to the present risk of financing agriculture.

Table 1. The share of agrarian budget in the national budget of the Republic of Serbia (Values expressed in billions of EUR)

Year	National budget of the Republic of Serbia	Agrarian budget of the Republic of Serbia	
		Amount allocated from the national budget	Percentage share
2007	7.52	0.27	3.60
2008	7.85	0.31	3.97
2009	7.51	0.17	2.22
2010	7.23	0.19	2.61
2011	8.09	0.19	2.36
2012	7.69	0.18	2.28
2013	9.49	0.36	3.78

Source: Authors' calculation, based on data from the website of the Ministry of Finance of the Republic of Serbia (Budgeting Laws of the Republic of Serbia for respective years).

Graph 1. Movement of percentage share of agrarian budget in the national budget of Serbia for the period 2007 - 2013



Source: Authors.

The financing of current agricultural production and additional investments from debt sources is a common thing, not only in domestic agriculture, but in general. The reason for this lies in the specificities of agricultural activities, i.e. in biological characteristics of production and duration of production cycle, which lead to a pronounced imbalance of financial income and expenditures. Agricultural production is characterized by a high level of seasonality which frequently leads to periodical imbalances between expenditures in the planting and revenues in the harvesting seasons. For this reason, loans with flexible loan repayment schedules harmonized with agricultural production cycles are often stipulated in the agricultural economics literature (Weber et al., 2014). When speaking of banking credits as foreign financing sources, it is important to highlight the difference between short-term loans designated for current liquidity and working capital financing and long-term loans designated for investments. For users of banking credit, it is an important rule that assets are linked to the term of investment, i.e. that short-term financial resources are not used for long-term investments, and vice versa. In order to change the way financial institutions perceive agriculture, as a high risk sector, we should introduce continuous measurement and monitoring of risk

in agriculture (Morgan et al., 2011). However, not even in economically developed countries the market for agricultural credits is not totally efficient (Swinnen and Gow, 1997). What is more, it cannot operate independently, without state intervention (Stiglitz et al., 1994). Several researches confirm that financing constraints affect farmers' investment decisions through an excess reliance on internal farm funds for investment. The constraints increase significantly and become much more acute following the financial and economic crisis. Some researchers find that financial constraints do impact investment, but the level and extent of the effect is dependent on the structure of the capital market as well as the overall macro-credit cycle (O'Toole et al., 2014). Some examples of reasons for rejecting a loan applicant are: "Insufficient farm business income", "Poor credit history of the applicant" and "Lack of collateral" (Hedman and Lagerqvist, 2013). It can be difficult for the farmer to use assets as collateral for several reasons: in proprietary farms there is a lack of differentiation between business assets and private assets and the farmer's machinery is not always possible to liquidize on a second-hand market. In other words: not all assets in a farm would be possible to use as collateral (Hedman and Lagerqvist, 2013).

Results – part II: comparative analysis

For Serbia, the process of joining the European Union represents a huge challenge. Positive experiences of countries which have already become part of the EU are only partially applicable to Serbia. Factors which degrade the status of Serbia are connected with the "ad hoc" concept of agrarian policy, lack of capital base, centralized system of public finances and lack of financial resources at regional and municipal levels, varying scope and quality of raw materials production, poor/weak banking system, slow building of the economic infrastructure and also slow adjustments with respect to the legislative framework. On the other hand, the advantages of domestic agriculture are long tradition, rich and diverse land resources as well as price competitiveness. Stagnation in integration processes weakens the domestic agriculture, unlike the agriculture of developed countries and thus presents a threat to maintaining the current position, and especially to any significant growth. The process of agricultural reforms in transitional countries is determined by their *starting positions* and also the pace and scope of reforms. A fundamental difference between the European model of agriculture and agriculture of non-European competitors lies exactly in the *multi-purpose* nature of agriculture in the European Union and its significant role in economy, society, living environment and contribution to the income of people from rural areas. The common agricultural policy presents the most expensive policy, from the perspective of the central budget of the EU (of the total structure, the Common agricultural policy makes 44% of the central EU budget).

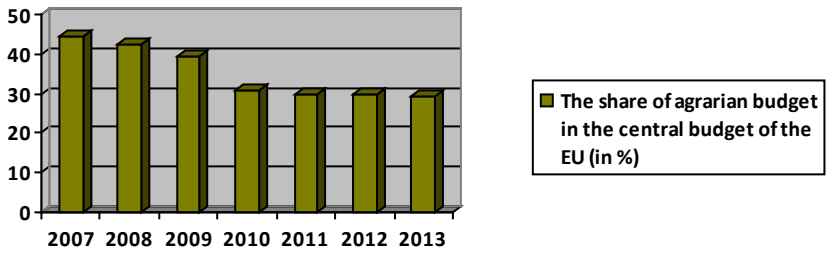
Table 2. The share of agrarian budget in the central budget of the EU (Values expressed in billions of EUR)

Year	Central budget of The European Union	Agrarian budget of the EU	
		Amount of financial resources from the central budget	Share (in %)
2007	126.5	56.30	44.50
2008	129.1	55.00	42.60
2009	133.7	52.50	39.30
2010	141.5	43.86	31.00
2011	141.9	42.57	30.00
2012	147.2	44.00	29.90
2013	150.9	44.00	29.10

Source: Authors' calculation, based on data from the website of the European Commission (Financial Framework 2007 - 2013).

One of the biggest weaknesses of the agriculture of Serbia is precisely financing. The two main shortcomings of the domestic agriculture policy are: a low level of budget allocation aimed at stimulating the development of agriculture (low agricultural budget), as well as annual level of finances allocated for agriculture with frequent changes of selection or amount of measures. On the other hand, one of the main characteristics of the Common agricultural policy is the concept of *seven-year* financing plans, which have been further divided into annual sub-plans, with precisely determined amounts of subsidies, potential users and purposes. This way, all participants in process of production, processing and food products placement, are guaranteed predictability, stability and consistency in agriculture policy, which are crucial preconditions of successful business operations. Long-term qualitative policy is necessary for Serbia to create a secure and attractive environment for the domestic and foreign investors in the agricultural business area.

Graph 2. Percentage share of agrarian budget in the central budget of the EU in the period 2007 - 2013 (decreasing tendency)

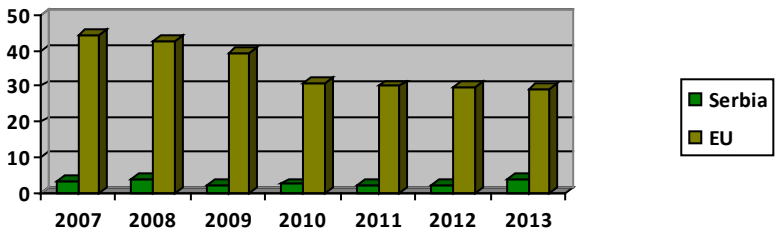


Source: Authors.

If we simultaneously compare the movement of agricultural share in the central budget of Serbia on the one hand, and the European Union- on the other, we come to an obvious conclusion that financial allocations for agriculture were ten times bigger in the EU

than in our country, Serbia. However, the percentage share of budget designated for financing the Common agricultural policy within the structure of the total budget of the EU significantly decreases with time. One of the possible explanations for this is also a movement towards the so-called "weightless economy" (giving advantage to investments in intangible assets in time of the "knowledge economy") and gradual abandonment of traditional models of business ("tangible" production). On the other hand resources being allocated for agriculture in Serbia are not sufficient to provide the development and improvement of this sector. However, the share of agricultural in the total national budget of Serbia does not show a decreasing tendency, nor does it show an increasing tendency above the modest 5 per cent (which is a paradox, given that agricultural area covers around 60 per cent of the total territory of Serbia, and 43 per cent of the total population of Serbia lives in rural areas). Hence, there is an evident imbalance between the existing natural resources/potentials and defined hierarchy of development objectives (wrong directing).

Graph 3. Comparative analysis of the share of agrarian in the central budget between Serbia and the European Union in the period 2007 - 2013



Source: Authors.

Without any doubt, we should learn from other people's mistakes, but not uncritically apply other countries' experiences to the domestic situation at the current stage of agricultural and rural development and preparations for accession to the EU. Strategies for restructuring of the agricultural sector and agricultural policies of transitional countries largely differed between one another. The Baltic countries (Estonia, Latvia and Lithuania) and Poland implemented the so-called "shock therapy" at the beginning of the transitional period. During this period, agrarian support and import protection were drastically reduced; national economy was open to international competition and farming estates were more taxed than stimulated. On the other hand, the Czech Republic, Slovakia and Hungary gradually adjusted and reformed their agriculture policies. The greatest benefits from reform come from moving from market price support (MPS) to other forms of support. This is most evident in Switzerland, where a gradual process of reinstrumentation of policy away from MPS to payments not requiring production has significantly reduced the production and trade distorting impacts of agricultural policy (Martini, 2011).

Table 3. Amount of budget for support to the agriculture of Slovenia in the period 2007 - 2010 (Expressed in millions of EUR)

Year	Budget for support to agriculture
2007	379,908
2008	446,321
2009	479,220
2010	427,982

Source: Radović, 2011, p. 111.

Farm businesses generally present a less complex setting for capital structure than do large corporate firms. Internal equity and debt are the major financing alternatives, while external equity and direct access to capital markets are beyond the reach of most farms. Nonetheless, capital intensity of farm businesses is high, production cycles can be lengthy and seasonal, life cycle effects are present, and rates of return on assets are relatively low and volatile (Zhao et al., 2008). Last year, the National Regional Development Agency carried out research on a sample of 21 companies from the sector of agriculture, forestry and fishery (with the highest total income recorded in 2010), which they used to analyze the influence of the world economic crisis on this sector. The most dramatic signal of financial instability also hitting agriculture was the sudden worsening of the financial leverage rate. In 2008, the leverage rate rise by almost 4 percentage points to 18%. Before 2008, it had remained quite stable, ranging annually between 13 and 16%. The 4 percentage-point rise observed in 2008 was twice the 2 percentage-point rise observed during the economic recession in the late 1980s and early 1990s (Pietola et al., 2011).

Table 4. Financial indicators for the sector of agriculture, forestry and fishery (the case of Serbia), (Expressed in 000 RSD)

Indicator	2007	2008	2009	2010
Share of financing responsibilities	54.88	57.13	58.37	62.52
Coverage of long-term assets by capital	1.12	0.97	0.92	0.93
Coefficient of current liquidity	1.20	1.18	1.04	1.04
Stock turnover coefficient	3.49	3.96	3.66	3.76
Coefficient of accounts receivable turnover	8.02	8.06	7.05	7.01
Economical business operations	1.03	0.99	0.95	0.98
Return on Assets (ROA)	3.94	1.73	1.55	0.88
Net margin	2.41	-3.99	-3.71	-1.87
Financial expenditures	985,956	1,834,738	2,393,593	3,198,422
Earnings before income and tax (EBIT)	324,737	367,040	214,633	188,897
Total revenues	35,963,260	43,019,252	46,248,248	62,362,612

Source: National Regional Development Agency, 2012, p. 29.

Table 5. Financial indicators for the sector of agriculture, forestry and fishery (the case of Slovenia), (Expressed in EUR)

Indicator	2007	2008	2009	2010
Share of financing responsibilities	41.05	42.82	45.48	46.10
Coverage of long-term assets by capital	0.96	0.97	0.92	0.92
Coefficient of current liquidity	1.62	1.68	1.68	1.61
Stock turnover coefficient	11.98	11.60	10.34	11.92
Coefficient of accounts receivable turnover	5.78	5.95	5.27	5.34
Economical business operations	1.06	1.00	0.98	1.00
Return on Assets (ROA)	4.05	1.07	-1.19	0.06
Net margin	3.34	-0.86	-3.37	-0.69
Financial expenditures	5,581,129	7,535,321	5,874,774	4,303,254
Earnings before income and tax (EBIT)	2,886,747	(998,594)	(3,194,007)	1,825,150
Total revenues	232,739,673	252,771,550	223,231,975	221,882,472

Source: National Regional Development Agency, 2012, p. 83.

Ratio analysis is often used as a tool of financial analysis within the agricultural sector (Katchova and Enlow, 2013). If we compare results from the previous two tables (micro-aspect: analysis of business success), we can see that the agricultural companies of Serbia have even 10 times higher share of financing responsibilities compared to Slovenia (growth of indebtedness), whereas they have even 3 times lower coefficient of stock turnover (poor sales and cash management). Long-term financial stability has been rated on the basis of the coefficient of long-term assets coverage (capability to finance long-term assets by long-term financing sources). If the value of this coefficient is below 1, financial stability of a company has been impaired. In times of crisis, this indicator for both of the observed economies (for the agricultural sector) has recorded only a minimal value. The negative influence of crisis on the profitability of the agricultural sector (economical business operations, return on assets, and net margin) is evident in both countries. However, it is more pronounced in agricultural companies in Serbia. Financial expenditures of agricultural companies in Serbia are almost two times bigger than financial expenditures of agricultural companies in Slovenia (non - rational cost management). While the decrease or increase of industrial production or services can easily be observed month after month, agriculture - due to its specific nature - offers some extremely unreliable data for a short term, so it is very hard to identify the exact influence of crisis. What is more, changes in the way market chains operate increasingly higher sales thanks to supermarkets and specialized stores, all lead to an expanded market chain and thus a stronger influence of variable market flows on agriculture.

Discussion – problem of harmonization

As the experience of central-east European countries shows, the negotiating process and process of fulfilling conditions for a full-fledged membership in the European Union are extremely long and complex processes. An extremely "sensitive" area is agriculture and process of harmonization of national agriculture policies of future member countries with the

existing mechanisms of the Common agricultural policy of the European Union (Banse et al., 2008). Given that a large part of legislative (determined at the level of EU) is focused on agriculture, and that a significant part of budget is used to finance complex mechanisms of the Common agricultural policy, it is no surprise that the process of adjustments and harmonization in the domain of agriculture play a significant role in the pre-accession negotiating processes. The system and pricing policy of agricultural and food products, measures of budgeting support, legislative, relevant institutions, crediting sources and investments in agriculture, as well as expert and consultancy services, are only some of a large number of questions which require adequate responses in the process of replacing the national agricultural policy with the Common agricultural policy of the European Union. Since entering the unified European market implies the acknowledgment of provisions of multilateral trade agreements, the membership of Serbia in the World trade organization should present a significant step preceding full-fledged membership in the European Union. Our country was deprived of member status in the World trade organization when the United Nations imposed economic sanctions on Serbia in 1992. To the present day, membership status has not yet been granted to Serbia (Marković, 2007).

The expansion of the European Union has also increased the level of diversification of agriculture and rural economy, and thus limited the possibilities of strict implementation of single legislative defined at the level of the EU. More pronounced regional and local differences among rural communities call for more flexible support mechanisms, which will provide sustainable agricultural and rural development. Instead of compromising solutions which are present on the whole of the EU territory and are nowhere completely satisfactory, it is better (from the perspective of the Union), to provide flexible frameworks within which adequate solutions for specific sectors and regions can be found (Popović and Katić, 2007).

Table 6. Reform index for the agricultural sector

Country	Reform index for agricultural sector
The Czech Republic	9.2
Hungary	9.2
Poland	8.0
Slovakia	8.2
Central Europe	**8.7**
Albania	6.8
Bulgaria	8.0
Romania	6.6
Slovenia	9.2
The Balkans	**7.7**
Estonia	9.0
Latvia	9.0
Lithuania	8.0
The Baltic countries	**8.7**
Belorussia	1.8
Moldova	6.0

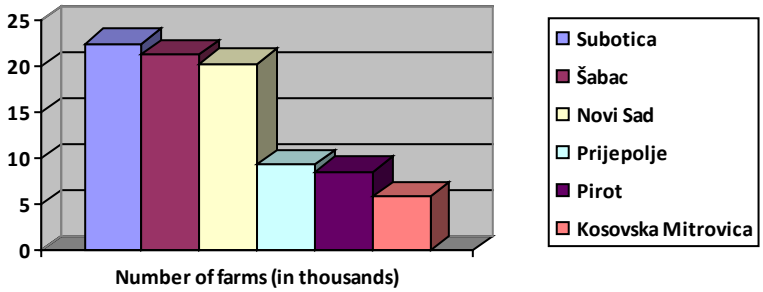
Country	Reform index for agricultural sector
Russia	5.8
Ukraine	6.0
Commonwealth of Independent States (Europe)	**4.9**
Kazakhstan	5.8
Kyrgyzstan	6.2
Tajikistan	4.8
Turkmenistan	2.0
Uzbekistan	3.4
Commonwealth of Independent States (Central Asia)	**4.4**

Source: Swinnen, 2004, p. 13.

In the coming years, Serbia should adjust the domestic agricultural policy and harmonize it with the Common agricultural policy, in terms of the measures which are necessary to implement, as well as amounts allocated to stimulate the development of agriculture. It is necessary to harmonize measures of the domestic agricultural policy with the measures of the Common agricultural policy of the European Union, so that responsibilities of some future membership do not cause fatal consequences for the domestic agriculture. This implies the creation of measures which are in accordance with the already existing ones in the EU, while at the same time anticipating the future measures of the Common agricultural policy.

Although Serbia has rich natural resources, in many areas both industry and farms lack modern technology, and strongly need technical improvements and increased financial resources for further development (Urban-Rural Disparities). As a result of weakness in technology and access to finance, Serbia does not have productivity on the level of the EU, or, in many cases even on the level of its neighbors.

Graph 5. Regional economic disparities in Serbia (gap between developed north and underdeveloped south) – the agrarian aspect

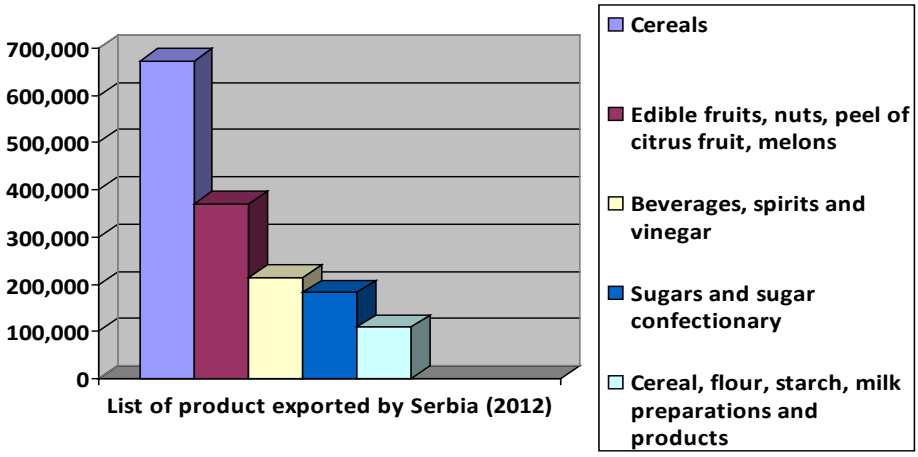


Source: Author's analysis, based on data from the Treasury of The Republic of Serbia, 2012.

Because of the time-lag between the payment for variable agricultural inputs and obtaining revenues from sale of production the farm has a demand for the short-term credit. The demand for credit can be satisfied either internally (cash flow, savings, subsidy) or externally (bank loan, or trade credit), (Ciaian et al., 2011). Subsidies may increase bank loans, reduce

them or have no impact on bank loans depending on whether farms are credit constrained, whether subsidies are allocated at the beginning or at the end of the growing season, and on the relative cost of internal and external financing (Ciaian et al., 2011). Finance matters for sustainable export performance. Subsidies can be distributed among individuals according to a set of selected criteria: level of income, social group, merit, etc. Two types of errors arise if proper subsidy targeting is not done (exclusion and inclusion errors): in the former case, some of those who deserve to receive a subsidy are excluded, and in the latter case, some of those who do not deserve to receive subsidy get included in the subsidy programme. For example, in 2009, Serbia was within top ten largest world exporter of corn. Being so important factor in Serbian economy, it is expected that there is a need for future high investments in agribusiness sector. Since domestic sources are very limited, the other possibility is to attract foreign investors.

Graph 6. Export potentials of Serbia (US Dollar thousand) – the agrarian aspect



Source: Author's analysis, based on data from the International Trade Centre, 2012.

Table 7. SWOT analysis – Role of innovative sources of finance in the agricultural development of Serbia

STRENGTHS	WEAKNESSES
· Favorable geographic location and pleasant climate · Strengthening of investment predispositions · Privatization process (increase of capital base) · Participation in making of the all-encompassing EU strategy for the Danube region · Increased number of financial resources from IPA funds · More intensive across-border cooperation · Slight expansion of financial market · Positive example of a company "Foodland" as a motivating factor – "World Star" award for the product "Bakina tajna" (eng. Granny's secret) – for the world's best product package)	· Privatization difficulties · Lack of strategic partnerships · High unemployment · High public debt · Uncompetitiveness and insolvency of economy · Insufficient knowledge about the importance of technological innovations in economy · Financial crisis and crisis of trust · Decrease of living standard (fall of demand) · Neglect of local development potentials (tradition and resource structure) · Overly fragmented farming estates · Undeveloped cooperatives (poor organization of agricultural producers) · High interest rates for agricultural credits

OPPORTUNITIES	THREATS
· Subsidy targeting · Demonopolization and fair trade · Participation in projects related to agriculture · Participation in fairs (networking) · Promotion of domestic food products as part of a tourist offer (so-called "gourmet" tourism) · More active engagement of economic chambers · Mentoring programs in agriculture · Introduction of e-governance (improvement of administration) · Information technologies in agriculture (identification systems of lots) · Role of media – introduction of "Rural TV" (TV channel with exclusively agricultural content) · introduction of rating systems for valuation of small and mid-sized agricultural companies (agricultural rating) · open competition for grants/funding for agriculture · selective credit schemes in commercial banks (more favorable income rates) · rural banking (credits for rural population) · micro-credit loan programs (credits for small scale farmers) · "Business Angels" investors · "Seed Capital" funds · "Venture Capital" funds · Brownfield and Greenfield investments · Development of municipalities · So-called "Rurban" projects (projects of partnership between rural and urban areas) · Development of rural entrepreneurship (family business) · Organic food production (diversification of production assortment) · Greenhouse production	· Tainted image of Serbia · More active engagement of Serbian embassies · Political inconsistence and instability · Corruption and "grey" economy · Lack of long-term development vision · Impaired relationship with "neighboring" countries · Weak national currency (evident risk in export arrangements) · Rural "exodus" (migration of population from rural to urban areas) · Negative natural growth · "Brain drain" (external migration) · Solution to the problem of the rural young generations (lack of social, economic and cultural content)

Source: Authors.

Hence, the development of a profitable, economically sustainable agriculture is an attainable goal. However, it is necessary to reform agricultural structure first, regulate the agricultural products market, develop a system of capital investments, create a logistic platform and strengthen education. The area dealing with agricultural finances could be defined as a dynamic, and functional utilization of resources - monetary (savings, subsidies and loans), as well as non-monetary ones (production factors), (Cabannes, 2012).

Conclusion

Despite the fact that farming area covers around 60% of the total territory of Serbia, and that 43% of the total population lives in rural areas, the agricultural sector is continuously being neglected. On the other hand, the importance of rural development is continuously growing in the European Union, year after year. Apart from economic and political, there are also social reasons and reasons connected with health and wellbeing which contribute to this agenda. The Common agricultural policy is the oldest and most carefully reformed common policy of a sector. Nowadays, even more than 40% of the EU budget is spent on financing

various agricultural programs (this is over 50 billion euros per year), which only emphasizes their importance. Formally seen, the main objectives of the Common agricultural policy have not changed since the beginning of the European integrations process. However, over the last fifteen years of reforms, the multi-purpose nature of European agriculture has been put to the foreground, which indicates that the agricultural policy has a "new face". Numerous external effects are now connected with agriculture. A popular name for this new concept of Common agricultural policy is the "European model of agriculture" or "sustainable agriculture". Climate changes, together with global food problems and issues related to energy security do not let us lose interest in agriculture and rural development in general. Hence, we should focus our attention on a "Copernican shift" of instruments and support mechanisms instead.

References

1. Babović, J., Veselinović, B. (2010): *Agrarna politika EU i prilagođavanje agrara Srbije*, Društveni izazovi evropskih integracija - Srbije i uporedna iskustva, Fakultet za pravne i poslovne studije, Novi Sad, pp. 195-206.
2. Banse, M., Helming, J. F. M., Nowicki, P., Van Meijl, H. (2008): *Future of European agriculture after the Health Check*, German Journal of Agricultural Economics, vol. 57(3/4), pp. 156-164, available on: http://ageconsearch.umn.edu/bitstream/97588/2/2_Banse.pdf
3. Cabannes, Y. (2012): *Financing Urban Agriculture*, Environment and Urbanization, vol. 24 (2), pp. 665-683, available on: http://eau.sagepub.com/content/24/2/665.full.pdf+html
4. Ciaian, P., Falkowski, J., Kancs, d'A. (2010): *Access to Credit, Factor Allocation and Farm Productivity: Evidence From the CEE Transition Economies*, 114th Seminar of the European Association of Agricultural Economists (EAAE), Proceedings, Berlin, Germany, pp. 1-35, available on: http://ageconsearch.umn.edu/bitstream/61347/2/Ciaian%20Falkowski%20Kancs%2061347.pdf
5. Ciaian, P., Pokrivcak, J., Szegenyova, K. (2011): *Do Agricultural Subsidies Crowd-out or Stimulate Rural Credit Market Institutions?: The Case of CAP Payments*, 2011 AAEA and NAREA Joint Annual Meeting, Pittsburgh, pp. 1-27, available on: http://ageconsearch.umn.edu/bitstream/103085/2/Paper.pdf
6. Curtiss, J. (2012): *Determinants of Financial Capital Use: Review of Theories and Implications for Rural Businesses*, Factor Markets Working Papers, No. 123, Centre for European Policy Studies, Brussels, Belgium, pp. 1-51, available on: http://ageconsearch.umn.edu/bitstream/122846/2/FM_WP19%20Determinants%20of%20financial%20capital%20use.pdf
7. Financial framework 2007-2013 (2012, July 10), available on: http://ec.europa.eu/budget/figures/2010/2010_en.cfm
8. Hedman, K., Lagerqvist, C. J. (2013): *Performance Indicators in Agricultural Financial Markets*, Factor Markets Working Paper No. 43, Centre for European Policy Studies, Brussels, Belgium, pp. 1-28, available on: www.ceps.eu/book/performance-indicators-agricultural-financial-markets

9. Katchova, A. L., Enlow, S. J. (2013): *Financial performance of publicly-traded agribusinesses*, Agricultural Finance Review, vol. 73 (1), pp. 58-73, available on: http://ageconsearch.umn.edu/bitstream/164518/2/Agribusiness%20Financial%20Performance.pdf
10. Marković, K. (2007): *Transformacija Zajedničke agrarne politike Evropske Unije i implikacije na poljoprivredu Srbije*, doktorska disertacija, Ekonomski fakultet Subotica, Subotica.
11. Martini, R. (2011): *Long Term Trends in Agricultural Policy Impacts*, OECD Food, Agriculture and Fisheries Papers, No. 45, OECD Publishing, pp. 1-102, available on: www.oecd-ilibrary.org/docserver/download/5kgdp5zw179q.pdf?expires=1408612555&id=id&accname=guest&checksum=80034D2A25F3621EFA0EE45F863B3AFA
12. Ministarstvo finansija Republike Srbije (2012, July 13), available on: www.mfp.gov.rs/pages/issue.php?id=1578
13. Mondelli, M. P. (2012): *The Determinants of External Private Equity Financing in Agricultural Production Businesses*, 27th International Conference of Agricultural Economists, Proceedings, Foz do Iguaçu, Brazil, pp. 1-27, available on: http://ageconsearch.umn.edu/bitstream/127135/2/Mondelli_2012_Determinants%20External%20Equity%20Finance%20in%20Agriculture_IAAE_AgEconSearch.pdf
14. Morgan, W., Cotter, J., Dowd, K. (2011): *Extreme Measures of Agricultural Financial Risk,* Quantitative finance, Vol. 4, pp. 1-39, available on: http://arxiv.org/ftp/arxiv/papers/1103/1103.5962.pdf
15. Nacionalna agencija za regionalni razvoj (2012): *Uticaj finansijske krize na poslovne performanse preduzeća po privrednim granama - komparativna analiza Srbije, Hrvatske i Slovenija*, Beograd, available on: http://narr.gov.rs/index.php/content/download/1604/8664/file/Uticaj%20finansijske%20krize,%20web.pdf
16. O'Toole, C., Newman, C., Hennessy, T. (2014): *Financing Constraints and Agricultural Investment: Effects of the Irish Financial Crisis*, Journal of Agricultural Economics, vol. 65(1), pp. 152-176, available on: http://onlinelibrary.wiley.com/doi/10.1111/1477-9552.12027/pdf
17. Pejanović, R., Milanović, M., Cvijanović, D. (2006): *Transition of agriculture in the Republic of Serbia*, Ekonomika poljoprivrede, IAE Belgrade, vol. 53 (4), pp. 937-946.
18. Pietola, K., Myyra, S., Heikkila, A. (2011): *The penetration of financial instability in agricultural credit and leveraging*, Centre for European Policy Studies (Brussels, Belgium), Factor Markets (Project), No. 2, pp. 1-20, available on: http://ceps.be/book/penetration-financial-instability-agricultural-credit-and-leveraging
19. Popović, V., Katić, B. (2007): *Nivo i struktura interne podrške poljoprivredi Srbije u procesu pristupanja STO i EU*, monografija, IEP, Beograd.
20. Radović, G. (2009): *Podrška države u funkciji finansiranja poljoprivrede*, Agroekonomika, vol. 38 (41-42), pp. 69-79.
21. Radović, G. (2011): *Model tranzicije slovenačke poljoprivrede*, Škola biznisa, vol. 8 (1), pp. 101-113.

22. Reyes, A., Lensink, R., Kuyvenhoven, A., Moll, H. (2012): *Dynamics of Investment for Market-Oriented Farmers in Chile*, 28th International Conference of Agricultural Economists, Proceedings, Foz do Iguaçu, Brazil, pp. 1-38, available on: http://ageconsearch.umn.edu/bitstream/126218/2/Dynamics%20of%20investment.pdf
23. Stiglitz, J., Jaramillo-Vallejo, J., Chal Park, Y. (1994): *The Role of the State in Financial Markets*, World Bank Research Observer, Annual Conference on Development Economics Supplement, pp. 19-61, available on: http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1994/03/01/000009265_3970702134931/Rendered/PDF/multi_page.pdf
24. Swinnen, J. (2004): *Policy Reform and Agricultural Adjustment in Transition Countries,* International Agricultural Trade Research Consortium - Adjusting to Domestic and International Agricultural Policy Reform in Industrial Countries, Philadelphia, pp. 1-25, available on: http://ageconsearch.umn.edu/bitstream/15761/1/cp04sw01.pdf
25. Swinnen, J., Gow, H. (1997): *Agricultural credit problems and policies during the transition to a market economy in Central and Eastern Europe*, Policy Research Group, Working Paper No. 6, pp. 1-32, available on: http://ageconsearch.umn.edu/bitstream/31887/1/prg-wp06.pdf
26. Veselinović, B., Ševarlić, M., Todorović, M. (2007): *Village Tourism as Generator of Rural Development in Serbia: Situation and Perspectives*, Thematics Proceedings from 100th Seminar of the EAAE, EAAE and DAES, Novi Sad, pp. 397-402.
27. Weber, R., Musshoff, O., Petrick, M. (2014): *How Flexible Repayment Schedules Affect Credit Risk in Microfinance*, Paper presented at the International Agricultural Risk, Finance and Insurance Conference (IARFIC), Vancouver, Canada, Diskussionspapiere, Department für Agrarökonomie und Rurale Entwicklung, No. 1404, pp. 1-35, avaiable on: http://econstor.eu/bitstream/10419/96512/1/783944519.pdf
28. Zhao, J., Barry, P., Katchova, A. (2008): *Signaling Credit Risk in Agriculture: Implications for Capital Structure Analysis*, Journal of Agricultural and Applied Economics, vol. 40 (3), pp. 805-820, available on: http://ageconsearch.umn.edu/bitstream/47260/2/jaae-40-03-805.pdf

KVALITATIVNA I KVANTITATIVNA ANALIZA MIKRO I MAKRO ASPEKTA AGRARNIH FINANSIJA

Branislav Veselinović[3], Maja Drobnjaković[4]

Sažetak

Epicentar ove analize jeste da pruži pregled trenutnog stanja u mikro i makro agrarnim finansijama u Srbiji i EU. Jedan od ciljeva ovog istraživanja jeste da se razmotre slabosti i potencijali agrarne politike u Srbiji, kroz poređenje sa razvijenijim zemljama. U ovoj kvalitativnoj i kvantitativnoj analizi, autori su koristili metod komparacije, metod analize i sinteze, induktivni i deduktivni metod, kao i pregled domaće i međunarodne literature. Postoji nekoliko važnih zaključaka koji mogu da se izvuku iz ovog rukopisa. Poljoprivrednici i poljoprivredna MSP imaju najslabiji pristup finansijskim sredstvima, od svih sektora u Srbiji. Finansijski sektor Srbije nudi siromašan opseg kreditnih proizvoda poljoprivrednom sektoru. Dakle, postojeći mehanizmi za mikro i makro agrarne finansije u Srbiji nisu adekvatni i promena bi trebalo da bude napravljena u samom pristupu.

***Ključne reči*:** *poljoprivreda, finansije, Srbija, EU, harmonizacija.*

3 Prof. dr Branislav Veselinović, redovni profesor, Fakultet za ekonomiju i inženjerski menadžment – Univerzitet Privredna akademija u Novom Sadu, Cvećarska br. 2, 21000 Novi Sad, Republika Srbija, Telefon: +381 63 505 350, E-mail: bveselinovic@fimek.edu.rs

4 Msr. Maja Drobnjaković, asistent, Fakultet za ekonomiju i inženjerski menadžment – Univerzitet Privredna akademija u Novom Sadu, Cvećarska br. 2, 21000 Novi Sad, Republika Srbija, Telefon: +381 64 237 60 32, E-mail: majadrobnjakovic@fimek.edu.rs

Review Article

Economics of Agriculture 3/2014
UDC: 35.073.1:338.48

THE GOVERNMENT POLICY IMPACT ON ECONOMIC DEVELOPMENT OF TOURISM

Aleksandra Vujko[1], Tamara Gajić[2]

Summary

Tycoons and politicians are the main players of tourism in most parts of the world, and they often use tourism as a tool for gaining economic and political power, and creating a positive, albeit propagandized, image of their country. The paper is based on a positive example of an approved project by the Government of Vojvodina Secretariat for Science and Technological Development. The main goal of this paper is to show whether the local residents are familiar with the project and how much they know about project, and what is their opinion about the impact which this project or other similar projects have on the observed area (Fruška Gora Mountain – Serbia). The conclusion is that there is a direct positive relationship between residents' perceptions of the benefits of tourism and their political support. The method survey was conducted on a random sample of the residents of seven local settlements (the sample of 249 participants). The data were processed with the SPSS program (version 17.0). Chi-square test is used to determine the frequency of specific deviations.

Key words: *tourism, government policy, economic development, local residents, Vojvodina.*

JEL: *Q56, Q58, R11, 013*

Introduction

The Republic of Serbia is at a historic crossroads where intensive adaptation to European integration is conducted and where there is a strong growth in the competitive capacity of institutions, companies and individuals. Vojvodina is part of the Republic of Serbia which is currently defining development goals and economic sectors with prospect of success. Vojvodina will have to build and implement, both independently and with the support of the international community, competitive strategies of growth, as soon as possible. In this context, tourism is seen as an essential complex with increasing untapped potential.

1 Aleksandra Vujko, Ph.D., Lecturer, Novi Sad Business School, Vladimira Perića Valtera Street no. 4, 21000 Novi Sad, Serbia, Phone: +381 64 914 26 45, E-mail: aleksandravujko@yahoo.com

2 Tamara Gajić, Ph.D., Professor of professional studies, Novi Sad Business School, Vladimira Perića Valtera Street no. 4, 21000 Novi Sad, Serbia, Phone: +381 63 565 544, E-mail: gajic_tamara@yahoo.com

Fruška Gora Mountain (Vujko, 2011), as the potential, is not sufficiently valued, because tourism has not been a serious issue in the development policy of the Government of Vojvodina. Now there has been recognized comparative advantage in tourism of the mountain, because it has a variety of tourism supply, it is close to the traditional and emerging tourism markets, and it has a long history and a general recognition, preserved natural resources, a good proportion of communication and a great human potential. However, the process of transformation of comparative into competitive advantages in tourism of Fruška Gora Mountain is part of the reform process, and political relationship to tourism as an important creator of national prosperity.

The subject of the matter is it to show how well residents of Fruška Gora Mountain are familiar with the projects (opinions and attitudes of local residents from the area of the mountain), that will provide the maximum benefit for all involved "stakeholders", and minimizing the negative impacts of the processes and activities to create a highly valuable experience for tourists. The case study of this paper is the project: "Functional connection between the excursion tourism and cycling tourism in the Fruška Gora Mountain" initiated by the Provincial Secretariat for Science and Technological Development.

It is necessary to explore the awareness of local residents with active measures implemented by the Government of Vojvodina in order to reduce unemployment, their familiarity with the current project, and attitudes about the importance of the project for the development of the area. The research results should contribute to understanding the importance of tourism policy as a factor in securing the success of tourist destinations. Primarily, such tourism policy must provide a clear picture of future prospects for a destination like Fruška Gora Mountain, especially in the long term.

Tourism is attributed to the "power" to foster socio-economic and demographic development. There are numerous examples of entire regions where tourism is the dominant or unifying activity. They involve comparative economic advantages in relation to the regions which do not develop tourism. It is therefore not surprising when we refer to tourism as a development catalyst (Nunkoo, Smith, 2013). These effects are present in our experiential heritage, so they are considered logical, almost axiomatic. They clearly explain why tourism is recognized as an "industry-initiative" of demographic and economic recovery, but not sufficient for generalization according to which any attempt to tourism development necessarily results in prosperity.

For the purposes of this research, the survey was used as a method, whereby 250 questionnaires were distributed and 249 of them were analysed. This analysis led to the confirmation of the given hypothesis and refutation of other hypotheses. The SPSS program, version 17.0, and T-square test were used. In addition to the research data, the authors used the available statistical and other secondary documentation.

It has come to the conclusion that there is a direct positive relationship between residents' perceptions of the benefits of tourism and their political support; local residents are aware of the active measures of the Government of Vojvodina for the economic development of tourism; local residents positively evaluated all active measures of the Government of Vojvodina

in their efforts to reduce the unemployment of the population. Among the existing active measures of the Government of Vojvodina, the local residents give the highest grades to the opportunity of self-employment; local residents are not familiar with the project: "Functional connection between the excursion tourism and cycling tourism in the Fruška Gora Mountain"; and local residents positively evaluated the implementation of projects related to tourism on the mountain.

Literature review

Institutionalists argue that the economic performance of government institutions is one of the strongest determinants of citizens' trust (Mishler, Rose, 2001; 2005). Citizens trust their government to the extent that its institutions produced desired economic outcomes and meet their expectations in the economic domain (Luhiste, 2006). Government's inability to deal with economic challenges such as unemployment and poverty impinges on citizens' trust. Nunkoo et al. (2012) reported that residents' perceptions of the economic performance of tourism institutions positively influenced political trust. Such a relationship has been validated by several studies in political science (Mishler, Rose, 2001; 2005; Wang, 2005; Wong et al., 2011).

The projects supported by the government institutions sublimate and encourage beneficial effects of other determinants and create numerous comparative advantages. Tourism thus reinforces those elements without which it does not work (transportation and utility infrastructure, ancillary service industries, aestheticized physiognomy of the settlement, urbanization, etc.), and acts as a complex factor. However, there is no uniformity. The power of tourism as a factor of economic growth varies depending on local factors – traffic and geographical location, degree of urbanization, proximity and importance of generating markets, tourist sites and types of demographic phenomena and processes that were found in this area.

Government is the principal actor in the political process of tourism development (Bramwell, 2011) and has usually adopted a more interventionist approach in tourism development than in other sectors (Ruhanen, 2013). Government controls the industry through formal ministries, other institutions, legislations, and various programs and funding initiatives (Elliot, 1997), and intervenes in tourism for environmental, political, and economic reasons (Nyaupane, Timothy, 2010). According to Hall (2005), government has seven functions in tourism development: coordination, planning, legislation and regulation, entrepreneurship, stimulation, social tourism, and public interest protection roles. Traditionally, economic concerns were the principal reasons for governments to intervene in tourism.

The negative effects of tourism and local residents' reluctance to accept development have meant that governments' roles in the sector have extended beyond economic considerations to address the environmental and social consequences of development. The diffusion of the sustainable development concept in the 1980s has also led governments to assume greater roles and responsibilities in tourism planning (Ruhanen, 2013). Governments now usually attempt to secure a balance between economic priorities, the environment, and the local residents in order to gain political support for tourism development (Bramwell, 2011). Political

economy suggests that a politically stable relationship between the state and the local residents is important to maintain political legitimacy and effective authority (Purcell, Nevins, 2005) and to ensure the state's ability to reflect the popular will (Bramwell, 2011).

Political legitimacy cannot be achieved without local residents' trust in government and their support for tourism development. Political motives for controlling tourism are very powerful, but they are subtle because governments never overtly release statements and information about their hidden political agendas (Kim et al., 2007). Political reasons include nationalism and identity, isolationist desires, marred foreign relations, and unbalanced power relations. From a political perspective, tourism is targeted by many developing countries as a way of demonstrating their independence and importance in the world. In a tourism context, political economy suggests that it is important for government to maintain legitimacy and influence on government processes by ensuring that the local residents support its policies (Wang, Bramwell, 2012). Residents' support for tourism is influenced by their perceptions of the benefits and costs of the sector (Jackson, Inbarakan, 2006).

Tourism development results in investment opportunities, better infrastructure, employment opportunities, more public development, and improvement in the local economy (Latkova, Vogt, 2012; Nunkoo, Ramkissoon, 2009; 2011; 2012). Tourism also provides opportunities for cultural exchanges (Besculides et al., 2002) and increases entertainment opportunities for local residents (Liu, Var, 1986; Andereck, Nyaupane, 2011; Latkova, Vogt, 2012). Several studies report a positive relationship between perceived benefits and support for tourism (Latkova, Vogt, 2012; Nunkoo, Gursoy, 2012; Nunkoo, Ramkissoon, 2011). Political economy suggests that a key role for the government is intervention to encourage the conditions for capital accumulation and economic expansion (Bevir, 2009). In the context of tourism, government often gives priority to economic growth over environmental and social concerns (Wang, Bramwell, 2012).

Research methodology

This study was conducted on Fruška Gora Mountain, located in Vojvodina, Serbia. This region is one of the fastest-growing areas of Serbia. A review of existing policy documents and published studies on Fruška Gora Mountain indicates that although tourism makes significant contributions to the local economy, the development of the sector also leads to a number of adverse consequences such as conflicts between tourism developers and residents, environmental destruction, marginalization of local residents, inadequate public consultation and opposition to tourism development. Planning authorities in Vojvodina recognize the need for community involvement in the sustainable development of the region and this has been expressed in a number of policy documents (e.g. Serbia tourism development strategy, 2005).

The research was a combination of quantitative methods (statistics and web analysis) and qualitative methods (interviews, discussion and written documents). Bibliographic speculative was used in the phase of defining the theoretical framework, and descriptive method for data processing and results interpretation. The first part of this research was the field research and data collection through direct examination that was conducted in the area of Fruška Gora Mountain. We examined the local population of seven places on the Fruška Gora Moun-

tain: Petrovaradin, Sremski Karlovci, Čortanovci, Ledinci, Sremska Kamenica, Erdevik and Banstol. The survey was conducted between May and August 2012, and the questionnaire consisted of questions grouped into independent and dependent variables.

Independent variables are a group of questions that are related to gender, age structure and education. In the second part of the results processing, the analysis of the dependent variables was done. The variables reflect the opinion of the participants about their familiarity with the project "Functional connection between the excursion tourism and cycling tourism in the Fruška Gora Mountain", and attitudes about the importance of the project for the development of the area. The participants were asked a set of questions in order to determine their familiarity with the active measures of the Government of Vojvodina to implement positive policies for tourism development. Also, the participants were asked to name the point, to describe as precisely as possible and to give their opinion on them.

The second part of the paper includes a "desk" research. The methodology involved the reading of official government documents available to the public. In fact, the subject of interest includes the incentives provided by the Government of Vojvodina for the economic development of tourism. They investigated all available sites and all supporting documentation of competent state institutions, such as Provincial Secretariat for Science and Technological Development of Vojvodina, Development Fund of the Republic of Serbia and the National Employment Service.

The study was started from the main hypothesis H: There is a direct positive relationship between residents' perceptions of the benefits of tourism and their political support. Under this hypothesis certain lower-level hypotheses are set: h1 – local residents are aware of the active measures of the Government of Vojvodina for the economic development of tourism; h2 – local residents positively evaluated all active measures of the Government of Vojvodina in their efforts to reduce the unemployment of the population. Among the existing active measures of the Government of Vojvodina, the local residents give the highest grades to the opportunity of self-employment; h3 – local residents are familiar with the project: "Functional connection between the excursion tourism and cycling tourism in the Fruška Gora Mountain"; h4 – local residents positively evaluated the implementation of projects related to tourism on the mountain.

Results and discussion

Out of the 250 questionnaires, 249 were analyzed, which makes fairly representative sample. In the survey, the participants were residents of the mountain in the following structure: Petrovaradin (41.8%), Sremski Karlovci (12.4%), Ledinci (12%), Čortanovci (10.4%), Banstol (6.8%) and Erdevik (6.8%). Regarding the age structure of the tourists, there are 61.4% of the male population and 38.6% of women. The largest percentage of them (51%) is aged between 31 and 50, followed by 42.2% of those who are over 51, then there are those aged from 16 to 30 (2.1%), and the lowest number of participants is below 15 (1.7%). The largest percentage of them (78.5%) completed secondary school education, followed by 10.7% with university degree, 5.8% who completed college, 4.5% with elementary education, whereas 0.4% of them have M.Sc./Ph.D. degree.

Table 1. Familiarity of local residents with the active measures of the Government of Vojvodina for the economic development of tourism

Are you familiar with the Government of Vojvodina active measures for the economic development of tourism?					In total
Gender	**Education**	**Count/%**	**Yes**	**No**	
Male	**Elementary education**	Count	5	3	8
		%	3.4%	2.1%	5.5%
	Secondary school education	Count	121	0	121
		%	82.9%	0%	82.9%
	College	Count	2	0	2
		%	1.4%	0%	1.4%
	University degree	Count	14	0	14
		%	9.6%	0%	9.6%
	MSc/PhD	Count	1	0	1
		%	0.7%	0%	0.7%
	Total	Count	143	3	146
		%	97.9%	2.1%	100.0%
Female	**Elementary education**	Count	3	0	3
		% of Total	3.3%	0	3.3%
	Secondary school education	Count	65	0	65
		% of Total	70.7%	0	70.7%
	College	Count	12	0	12
		% of Total	13.0%	0	13.0%
	University degree	Count	12	0	12
		% of Total	13.0%	0	13.0%
	Count		92	0	92
	% of Total		100.0%	0	100.0%

Attachment 1.	**Value**	**df**	**Statistical significance (p)**
Pearson Chi-Square	53.836	4	0.000

Source: research by authors

The results showed that almost all participants (Table 1) are familiar with the active measures of the Government of Vojvodina for the economic development of tourism. After examining the same table (Attachment 1) it can be concluded that there is a statistically significant difference in responses, which is $p = 0.000$. By analysing this data it can be concluded that the cause derives from the objective differences of participants. In fact, only three participants (2.1%) responded negatively to the question, and they are representatives of a younger population (grammar school) so it is not so surprising.

Table 2. The measures of the Government of Vojvodina

What are the measures of the Government of Vojvodina?					
Gender	**Projects**	**Loans**	**Subsidies**	**Do not know**	**In total**
Male	43	51	56	3	153
	17.3%	20.5%	22.5%	1.2%	61.4%
Female	25	57	14	0	96
	10.0%	22.9%	5.6%	0%	38.6%
In total	68	108	70	3	249
	27.3%	43.4%	28.1%	1.2%	100.0%

Source: research by authors

The results that can be seen in Table 2 show the degree of familiarity of the local residents with the measures of the Government of Vojvodina. It was interesting that the 98.8% of the participants responded that these measures appear in the forms of loans, various projects and subsidies. The analysis of the data confirmed lower-level hypothesis 1 (h1) which states that the local residents are familiar with the active measures of the Government of Vojvodina for the economic development of tourism.

After examining the table 3 it can be concluded that the same percentage of the population (98.8%) all the measures of the Government of Vojvodina are experiencing positive.

Table 3. The evaluated measures by the local residents

How do you evaluate these measures of the Government of Vojvodina?			
Gender	**Positive**	**Do not know**	**In Total**
Male	150	3	153
	60.2%	1.2%	61.4%
Female	96	0	96
	38.6%	0%	38.6%
In total	246	3	249
	98.8%	1.2%	100.0%

Source: research by authors

In Table 4 there are the participants' answers about the positive aspects of all measures of the Government of Vojvodina. The high percentage of the answers includes self-employment (35.7%), and new jobs (30.9%).

In fact, the participants positively evaluate all measures of the Government of Vojvodina, and the different responses can be seen in the responses of male and female participants.

The male participants give the highest score for self-employment (25.5%), and the female participants give the highest score for new jobs (15.7%). By the analysis of the data it can be seen that lower-level hypothesis 2 (h2) is confirmed that the local population is experiencing as positive all the active measures of the Government of Vojvodina in their efforts to reduce the unemployment rate. Based on the values p=0.010 there can be seen statistically significant differences in responses of different categories (Attachment 1).

Table 4. The positive aspects of measures of the Government of Vojvodina

What are the positive aspects?						
Gender	**New jobs**	**Self-employment**	**The revival of the villages**	**Area development**	**Do not know**	**In total**
Male	38	66	27	19	3	153
	15.3%	26.5%	10.8%	7.6%	1.2%	61.4%
Female	39	23	19	15	0	96
	15.7%	9.2%	7.6%	6.0%	0%	38.6%
In total	77	89	46	34	3	249
	30.9%	35.7%	18.5%	13.7%	1.2%	100.0%
Attachment 1.		**Value**	**df**		**Statistical significance (p)**	
Pearson Chi-Square		13.299	4		0.010	

Source: research by authors

Table 5. Familiarity with the project "Functional connection between the excursion tourism and cycling tourism in the Fruška Gora Mountain"

Have you heard of the project "Functional connection between the excursion tourism and cycling tourism in the Fruška Gora Mountain"?				
Gender	**Yes**	**No**	**Do not know**	**In total**
Male	1	52	1	54
	0.7%	35.9%	0.7%	37.2%
Female	1	34	3	38
	0.7%	23.4%	2.1%	26.2%
In total	4	137	4	145
	2.8%	94.5%	2.8%	100.0%
Attachment 1.	**Value**	**df**		**Statistical significance (p)**
Pearson Chi-Square Test	10.096	2		0.006

Source: research by authors

The results seen in Table 5 and Table 6 show that the locals were not familiar with the project "Functional connection between the excursion tourism and cycling tourism in the Fruška Gora Mountain" (Table 5), but they show extremely positive remarks concerning its influence on the development of a destination. These data suggest that the lower-level hypothesis h3 is not correct (Table 5), but that lower-level hypothesis h4 is correct (Table 6).

Table 6. Possible significance of the project "Functional connection between the excursion tourism and cycling tourism in the Fruška Gora Mountain"

If the project has achieved what should reflect its significance?							
Gender	**Villages would be better connected with each other**	**It would be more tourists to the mountain, both domestic and foreign**	**The ability to deal with rural tourism**	**Possibility to be marketed organic food and sell handicrafts and souvenirs**	**Thematic mapping of the mountain (cycling and mountain guides and maps)**	**Do not know**	**In total**
Male	19	35	29	35	32	3	153
	7.6%	14.1%	11.6%	14.1%	12.9%	1.2%	61.4%
Female	17	20	28	20	11	0	96
	6.8%	8.0%	11.2%	8.0%	4.4%	0%	38.6%
In total	36	55	57	55	43	3	249
	14.5%	22.1%	22.9%	22.1%	17.3%	1.2%	100.0%
Attachment 2.		**Value**		**df**		**St. sign. (p)**	
Test		8.989		5		0.109	

Source: research by authors

The public competition for co-funding of the projects of importance for science and technological development of the AP Vojvodina for the period 2011-2014 was opened during February 2 – 28, 2011. The Provincial Secretariat for Science and Technological Development, in accordance with its financial capacities, in the past years (2005-2011) approved co-funding of 92 projects (Table 7).

Table 7. The number of co-funded projects in Vojvodina per areas (2005-2011)

Scientific area	**Number of projects**						
Social Sciences and Humanities	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
	10	13	14	15	14	14	12
	Allotted sum (%) /RSD						
	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
	11.7	11.6	14.86	13.92	14.12	14.79	13.37

Source: The Provincial Secretariat for Science and Technological Development of Vojvodina

The results seen in Table 8 show in 2011 two municipalities in the area of Fruška Gora Mountains were granted funding. It certainly suggests that these municipalities also did some projects that contribute to the economic development of tourism.

Table 8. The loan funds by municipalities on the Fruška Gora Mountain (in 2011, in RSD)

Municipalities	**Number of loans**	**The estimated value**	**The approved loan**
Irig	1	742,000,000.00	200,000,000.00
Sremski Karlovci	1	1,500,000.00	1,195,976.00

Source: The Development Fund of the Republic of Serbia

The results seen in Table 9 show the amount of funds earmarked for the development of project documentation for the project: "Functional connection between the excursion tourism and cycling tourism in the Fruška Gora Mountain".

Table 9. Approved funding for the project from the "Right at the first chance" (in RSD)

The project: "Functional connection between the excursion tourism and cycling tourism in the Fruška Gora Mountain"	1,414,702.96

Source: research by authors

Table 10. The Government subsidies and loans that were valid (2011)

Programs of the National Employment Service by 2011.	Public competition for the organization of the implementation of public works.
	Public invitation for granting subsidies to employers to create new jobs.
	Public invitation for granting unemployed subsidies for self-employment.
	Competition for the implementation of measures of professional practice.
	Competition for the realization of the program "First Chance, 2011."
	Competition for funding training programs for employers.
	Public call to local governments to engage in the financing of programs and active labour market measures.
Encouraging new employment	An employer may use the deduction provided to get employed indefinitely with persons in the following categories: people older than 45/50, the trainees under 30; persons under 30 years of Persons with Disabilities.
	Exemption from payment of contributions can not realize state agencies and organizations, public enterprises, public services and other direct and indirect budget users.
Regional employment programs	The subsidy is granted as a lump sum of 100,000.00 RSD per newly employed person.
Development Fund of the Republic of Serbia	Loans to companies
	Loans for entrepreneurs
	Loans to convert innovation into a finished product
	Loans for unemployed
	Loans for Beginners
	Loans and incentives for enterprise development in the least developed municipalities

Source: The National Employment Service

The impact of tourism on the changes in the economic structure of the population is based on the labour-intensive nature of this activity since it was accompanied by increasing tourism activities. The specific scope of the manpower in tourism, at first glance, is the most reliable indicator of the economic importance of tourism.

Although the number of active employees in a particular activity does not have to be confirmation of its importance in the total domestic product, when it comes to tourism as a labour-intensive activity, the volume of active employees indicates the development trends of tourism.

Tourism is very important in developed regions, and it is not only one of the activities because it creates numerous jobs directly and indirectly. Bearing in mind that Serbia is one of those countries which are just beginning to form a new regional tourism destination in its economic policy, there are two main ways for the development of tourism: the formal principle of regulating tourism through legal measures and regulations that enable tourism development; or directly, through the material principle, i.e. the allocation of funds for specific development programs.

Those are specific subsidies and financial incentives for promising projects, which are part of the budgetary cost, so they are usually non-refundable. On the other hand, this results in channelling investment funds through selective credit and monetary policy, with flexible repayment terms and interest rates (Table 10). This way of economic policy led to the Government of Vojvodina to efficiently build all capacities with the shortest period of return on investment. All given tables (from 1 to 10) provide data that confirm the main hypothesis: that there is a direct positive relationship between residents' perceptions of the benefits of tourism and their political support.

Conclusion

For the purposes of the research, the authors conducted survey in the area of Fruška Gora Mountain. The starting points were assumptions, or more precisely, certain hypotheses and sub-hypotheses that should be proved or disproved. The conclusion is that there is a direct positive relationship between residents' perceptions of the benefits of tourism and their political support. In addition to these findings, the authors have used statistical and other information, as well as other available documentation. Based on the analysis of survey data it is confirmed that the hypothesis is in favour of large-scale tourism development as part of the overall regional economic and business development.

The analysis of the data confirmed lower-level hypothesis 1 (h1) which states that the local residents are familiar with the active measures of the Government of Vojvodina for the economic development of tourism. If the Government of Vojvodina accepts the strategic goal in the development of tourism, this will emphasize specialization instead of standardization and diversification instead of uniformity, so other ancillary businesses will have to adapt to it. This will bring up new projects and new opportunities. Reaching the right position in the tourism market in Europe and elsewhere is very difficult especially in the time of political and economic instability in the country. By the number of

beds, number of visits and overnight stays, Vojvodina is still at the level of the 1960s or 1970s. It is often said that the right way to achieve success in tourism and getting closer to Europe is to review the status of the past, learn from experience, create positive elements and eliminate limiting factors.

Lower-level hypothesis 2 (h2) also confirms that the local population is experiencing as positive all the active measures of the Government of Vojvodina in their efforts to reduce the unemployment rate. The participants replied that the positive aspects are new jobs, self-employment, the revival of the villages and area development. Employment is seen in the broader context of the new jobs, either in the private or public sector. The fact is that the need for complex of tourist services encourages the development of a number of other activities from the industry and outside it, and therefore indirect effects of tourism on increase of the number of active employees in the activities involved in the formation of the tourist supply should be taken into account. Many of these activities would not have the existing facilities and manpower without support from tourism. Employment is seen in the broader context of the new jobs, either in the private or public sector. The fact is that the need for complex of tourist services encourages the development of a number of other activities from the industry and outside it, and therefore indirect effects of tourism on increase of the number of active employees in the activities involved in the formation of the tourist supply should be taken into account. Many of these activities would not have the existing facilities and manpower without support from tourism.

Local residents are not familiar with the project: "Functional connection between the excursion tourism and cycling tourism in the Fruška Gora Mountain"; and that was the rejection of the lower-level hypothesis 3 (h3). This is because they lack knowledge of tourism and associated skills, and because of the priority placed upon economic growth by the policymakers, with little concern for equity.

Lower-level hypothesis 4 (h4) also confirms that the local residents positively evaluated the implementation of projects related to tourism on the mountain. These projects are managed by the relevant national ministry which has been responsible for the preparation of the national strategy for tourism, training and investment programs, projects and infrastructure development and other activities that can improve investment conditions in Serbia. In addition to the fact that they connect people, cross-border cooperation between EU member states and their neighbouring partner countries represents investment in building human capacity and institutions that jointly develop and implement the projects dealing with their common economic and social challenges.

The term ''policy'' is in conflict with the purely economic objectives (Hall, 1994; Bhat, Tang, 2001), on the one hand, and general social status or the status of individual states in the creation of global processes in the world, on the other hand. Connected into one unit like tourism economic policy it must monitor tourism so as not to disturb the movements between tourism supply and tourism demand. These trends must be considered unique as there are tourists all over the world with the same or similar motifs, but the environment in which they are located and accomplish their goals of travel is different. Therefore, tourism

policies of all countries come from the state of socio-economic system and economic interrelationships of various economic activities.

The process of economic development imposes the micro and macro aspects of economic policy. At the macro level, globalization of tourism requires the latest enterprise organization, direct providers of tourist services and as well as complementary ones that perform processing on the tourist market and distribute tourism trends. In this regard, the management gets the integral position of connecting all the executive functions of successful business in tourism enterprises, while the part of management that determines the development strategy of the company is closely related and directly affected by macroeconomic policy in tourism. It means that the states through their individual instruments perform integration of individual global goals into a unique objective i.e. one that is accepted by the international community.

Positive economic effects of tourism development are reflected in many ways (de Oliveira, 2003). The money spent by foreign tourists in the country has a multiple effect, thus generating multiple effects on national income and employment. Spending by foreign tourists causes the initial impetus that begins the multiplier sequence. This consumption is topped with income from foreign countries, which passes through a series of activities and branches, as long as it is not transferred abroad, on imports of goods and services, or it changes in domestic savings. Of all the direct effects, the most important is the balance of payments and foreign exchange impact of tourism economic theory, or so-called phenomenon of "invisible exports" – created by providing services to foreign tourists. It is the realization under the very favourable circumstances, where the provision of travel services provides better prices for agricultural products, rather than through traditional exports.

The main reason lies in the nature of tourism demand for food and drink in a tourist destination. Besides the fact that agricultural products are sold to foreign tourists at prices that are significantly higher than exports, it is important that the realization is in the country of production, so there is elimination of transportation costs and protectionist barriers to foreign markets. Various types of import quotas, high standards of health and environmental suitability, rigorous quality control are thus eliminated through the implementation of agricultural products through tourism services. Therefore, foreign currency inflow from such exports is the largest. It is relatively easy access to such export, with the possibility of employment of local residents, in the tourism industry, and the accompanying activities (Cheong, Miller, 2000).

Among all the activities the agriculture occupies an important place (Pešić, 1996). As a potentially new tourist country, which seeks its place in the tourist market, the Republic of Serbia has a good opportunity to direct the development of tourism in the right direction, for several reasons: it can choose good and bad experiences of other countries; it can create tourism products and its market position in accordance with the latest trends; it cannot act quickly due to the inherited infrastructure and organization in tourism; it may use a critical mass of knowledge and internal capacity as the advantage of quick entry into the international tourism competition.

The Republic of Serbia has to gain the trust of the international tourism business. In this regard, and in order to carry out its tourism industry in the world market, The Republic of Serbia has to establish a professional institutional infrastructure in the form of special centralized institutions (agencies). It would have to play a key responsibility for the development and growth of selected Serbian tourism products.

References

1. Andereck, K. L., Nyaupane, G. P. (2011): *Exploring the nature of tourism and quality of life perceptions among residents,* Journal of Travel Research, no. 50, pp. 248–260.
2. Bramwell, B. (2011): *Governance, the state and sustainable tourism: a political economy approach,* Journal of Sustainable Tourism, vol. 19(4/5), pp. 459–477.
3. Besculides, A., Lee, M. E., McCormick, P. J. (2002): *Residents' perceptions of the cultural benefits of tourism,* Annals of Tourism Research, vol. 29(2), pp. 303–319.
4. Bhatt, N., Tang, S. Y. (2001): *Delivering microfinance in developing countries: Controversies and policy perspectives,* Policy Studies Journal, vol. 29(2), pp. 319–333.
5. Bevir, M. (2009): *Key concepts in governance,* London: Sage.
6. Cheong, S., Miller, M. L. (2000): *Power and tourism: A Foucauldian observation*, Annals of Tourism Research, vol. 27(2), pp. 371–390.
7. de Oliveira, J. A. P. (2003): *Government responses to tourism development: Three Brazilian case studies,* Tourism Management, no. 24, pp. 97–110.
8. Elliott, J. (1997): *Tourism: Politics and public sector management,* New York: Routledge.
9. Hall, C. M. (1994): *Tourism and politics: Policy, power and place,* Chichester, England: John Wiley & Sons.
10. Hall, C. M. (2005): *The role of government in the management of tourism: the public sector and tourism policies,* In: L. Pender, R. Sharpley (Eds.) The management of tourism (pp. 217–230), Thousand Oaks, CA: Sage Publications.
11. Jackson, M. S., Inbarakan, R. J. (2006): *Evaluating residents' attitudes and intentions to act toward tourism development in Regional Victoria, Australia,* International Journal of Tourism Research, no. 8, pp. 355–366.
12. Kim, S. S., Timothy, D. J., Han, H. C. (2007): *Tourism and political ideologies: a case of tourism in North Korea,* Tourism Management, vol. 28(4), pp. 1031–1043.
13. Luhiste, K. (2006): *Explaining trust in political institutions: some illustrations from the Baltic States,* Communist and Post-communist Studies, vol. 39, pp. 475–496.
14. Latkova, P., Vogt, C. A. (2012): *Residents' attitudes toward existing and future tourism development in rural communities,* Journal of Travel Research, vol. 51, pp. 50–67.
15. Liu, J., Var, T. (1986): *Residential attitudes toward tourism impact in Hawaii,* Annals of Tourism Research, vol. 13, pp. 193–214.
16. Mishler, W., Rose, R. (2001): *What the origins of political trust? Testing institutional*

and cultural theories in post-communist societies, Comparative Political Studies, no. 34, pp. 30–62.

17. Mishler, W., Rose, R. (2005): *What are the political consequences of trust? A test of cultural and institutional theories in Russia,* Comparative Political Studies, vol. 38(9), pp. 1050–1078.
18. Nyaupane, G. P., Timothy, D. J. (2010): *Power, regionalism and tourism policy in Bhutan,* Annals of Tourism Research, vol. 37(4), pp. 969–988.
19. Nunkoo, R., Smith, S. L. J. (2013): *Political economy of tourism: Trust in government actors, political support, and their determinants,* Tourism management, vol. 36, pp. 120–132.
20. Nunkoo, R., Gursoy, D. (2012): *Residents' support for tourism: an Identity perspective,* Annals of Tourism Research, vol. 39(1), pp. 243–268.
21. Nunkoo, R., Ramkissoon, H. (2009): *Applying the means-end chain theory and the laddering technique to the study of host attitudes to tourism,* Journal of Sustainable Tourism, vol. 17(3), pp. 337–355.
22. Nunkoo, R., Ramkissoon, H. (2011): *Developing a community support model for tourism,* Annals of Tourism Research, vol. 38(3), pp. 964–988.
23. Nunkoo, R., Ramkissoon, H. (2012): *Power, trust, social exchange and community support,* Annals of Tourism Research, vol. 39(3), pp. 997–1023.
24. Nunkoo, R., Ramkissoon, H., Gursoy, D. (2012): *Public trust in tourism institutions,* Annals of Tourism Research, vol. 39(3), pp. 1538–1564.
25. Purcell, M., Nevins, J. (2005): *Pushing the boundary: state restructuring, state theory, and the case of US: Mexico border enforcement in the 1990s,* Political Geography, vol. 24(2), pp. 211–235.
26. Pešić, R. (1996): *Turizam-vrhunski vid realizacije poljoprivrednih proizvoda,* Zbornik radova "Poljoprivreda i turizam Jugoslavije", Savez poljoprivrednih inženjera i tehničara Jugoslavije, Beograd.
27. Ruhanen, L. (2013): *Local government: facilitator or inhibitor of sustainable tourism development,* Journal of Sustainable Tourism, vol. 21(1), pp. 80–98.
28. Serbia tourism development strategy (2005), Retrieved January 22nd, 2013, from Novi Sad University, Department of Geography, Tourism and Hotel management, available at: www.dgt.uns.ac.rs/ download /ektur04v.pdf
29. Vujko, A. (2011): *Fruška gora i Vršačke planine - sadašnje i buduće destinacije sportsko-rekreativnog turizma*, doktorska disertacija, PMF, Departman za geografiju, turizam i hotelijerstvo, Novi Sad.
30. Wang, Z. (2005): *Before the emergence of critical citizens: economic development and political trust in China,* International Review of Sociology, vol. 15(1), pp. 155–171.
31. Wang, Y., Bramwell, B. (2012): *Heritage protection and tourism development priorities in Hangzhou, China: a political economy and governance perspective,* Tourism

Management, vol. 33, pp. 988–998.

32. Wong, T. K., Wan, P., Hsiao, H. M. (2011): *The bases of political trust in six Asian societies: institutional and cultural explanations compared,* International Political Science Review, vol. 32(3), pp. 263-281.

UTICAJ VLADINE POLITIKE NA EKONOMSKI RAZVOJ TURIZMA

Aleksandra Vujko[3], Tamara Gajić[4]

Rezime

Tajkuni i političari su glavni „igrači" u oblasti turizma u većini delova sveta, i oni često koriste *turizam kao „sredstvo" za sticanje ekonomske i političke moći, te stvaranje pozitivne, iako propaganizovane, slike svoje zemlje. Rad se bazira na pozitivnom primeru odobrenog projekta od strane Vlade Vojvodine i Sekretarijata za nauku i tehnološki razvoj. Glavni cilj ovog rada je pokazati da su lokalni stanovnici upoznati s projektom i koliko oni znaju o projektu, kao i šta je njihovo mišljenje o uticaju koji ovaj projekt i drugi slični projekti imaju na posmatrani prostor (Fruška gora - Srbija). Zaključak je da postoji direktan pozitivan odnos između percepcije stanovništva o prednostima turizma i političke podrške države. Istraživanje je sprovedeno metodom slučajnog uzorka kod stanovništva sedam lokalnih naselja (uzorak od 249 ispitanika). Podaci su obrađeni SPSS programom (verzija 17.0). Da bi se odredila učestalost određenih odstupanja korišten je hi-kvadrat test.*

Ključne reči: *turizam, vladina politika, ekonomski razvoj, lokalno stanovništvo, Vojvodina.*

3 Dr Aleksandra Vujko, Visoka poslovna škola strukovnih studija, Vladimira Perića Valtera, 21000 Novi Sad, Srbija, Telefon: +381 64 914 26 45, E-mail: aleksandravujko@yahoo.com

4 Dr Tamara Gajić, Visoka poslovna škola strukovnih studija, Vladimira Perića Valtera 4, 21000 Novi Sad, Srbija, Telefon: +381 63 565 544, E-mail: gajic_tamara@yahoo.com

Review Article

Economics of Agriculture 3/2014
UDC: 005.331:631

FARMERS' MANAGEMENT CAPACITIES AS A SUCCESS FACTOR IN AGRICULTURE: A REVIEW

Nataša Vukelić[1], Vesna Rodić[2]

Summary

Farms operating under more or less similar environmental and socio-economic conditions often reflect significant differences in production and economic results they achieve. Such differences are most commonly attributed to: biological factors, the level of specialization, the intensity of production, the size of farms and/or implemented production practice, etc. It is considered that the differences in achieved results, that is, the success of a farm can be, to a large extent, explained by variations in farmers' management capacities. Management capacities can be defined as possession of appropriate personal characteristics and capabilities of farmers (managers) to cope with specific problems and opportunities at the right time and in the right way.

With the changes taking place within the modern agricultural production, it is becoming more and more difficult to maintain competitive advantages, thus the farmers are progressively confronted with the requirements for certain management capacities which will enable them to take advantage of the existing conditions in the best possible way, i.e. to choose and implement the optimal production practice.

As the management capacities are rarely explicitly defined and quantified, particularly when it comes to agricultural producers, the aim of this study is to provide a review of the previous research in this field while highlighting the significance of these issues.

Key words: *managerial capacities, farmer, agricultural production.*

JEL: *J24, J53, D79*

Introduction

Good management is one of the key factors of success in all types of production, including agricultural. In order to be successful, i.e. to achieve successful and competitive

1 Nataša Vukelić, M.A., Assistant, University of Novi Sad, Faculty of Agriculture, Department of Agricultural Economics and Rural Sociology, Trg Dositeja Obradovića no. 8, 21000 Novi Sad, Serbia, Phone: +381214853992, E-mail: vukelicn@polj.uns.ac.rs

2 Prof. dr Vesna Rodić, Ph.D., Full professor, University of Novi Sad, Faculty of Agriculture, Department of Agricultural Economics and Rural Sociology, Trg Dositeja Obradovića no. 8, 21000 Novi Sad, Serbia, Phone: +381214853313, E-mail: rodicv@polj.uns.ac.rs

production, farmers must dedicate much more of their time and pay much more attention when making management decisions, also in the process of development of management skills, as compared to their predecessors (Kay et al., 2008). Day after day, agricultural production is being developed and modernized, and there is higher degree of intensity and specialization, new technologies are being continuously adopted, production capacities are being expanded, investments into production process are being intensified, etc. All those factors create new management issues, but, at the same time, represent new opportunities for the farmers with adequate and high management capacities.

Farms operating under more or less similar environmental and socio-economic conditions often reflect significant differences in production and economic results they achieve. Such differences can be attributed to: biological factors, the level of specialization, the intensity of production, the size of farms, implemented production practice such as, for e.g., succession of crops and crop rotation, timely performance of specific operations, selection and implementation of appropriate fertilizers, pesticides and mechanization, adequate irrigation, storing methods, methods and conditions of placements of final products, etc. Many of these factors have been, and still are, the subject of great number of agronomic and agro-economic research studies. However, there is an issue which numerous empirical researches and literature have lately tried to explain, but which, on the other hand, has not been sufficiently researched, and it concerns the following: Why do certain farms have better utilization of resources at their disposal, as compared to the others? Why certain farms merge and get specialized, and others do not? Why do some farms implement higher and others lower level of intensity, and why do some of them implement practice which, in actual conditions, results in better production and economic results and others do not?

It is considered that the difference in achieved results, that is, the success of farms can, to a great extent be explained with differences in management capacities of farmers. Management capacities can be defined as "having the appropriate personal characteristics and skills to deal with the right problems and opportunities in the right moment and in the right way" (Rougoor et al., 1998; Rougoor, 1999; Trip, 2000).

As the management capacities are rarely explicitly defined and quantified, particularly when it comes to farmers, the aim of this study is to highlight significance of the said, to point out to the opportunities and the methods of their assessment, and to provide a review of the research activities conducted so far.

Management capacities as a success factor in agriculture

The significance of the human factor for success in agricultural production has been extensively studied. It is widely accepted in literature (Garforth, Rehman, 2005) that the initial theoretical and conceptual frameworks were established by Ashby, who was studying, far in 1930s, the behaviour and the motivation of farmers, and their influence on the management in production. Case and Johnston (1953) were observing management capacities even as the fourth factor of production, apart from three traditional factors such as soil, capital and the labour force. This was followed by research studies of distinguished agricultural economists

Heady (1956), Johnson (1976) and Petrini (1970) were studying differences among the farmers, their motivations and behaviour.

The cutting edge in this field is the research study of Gasson (1973), who focused the attention to identification of drivers which farmers follow when making decisions. This was followed by numerous researches concerning the issue.

The research studies from earlier periods were mainly focused on influence of farmer personal (demographic) characteristics, such as age, education, gender, experience, etc., on production effectiveness. However, the accent is lately increasingly focused on decision making process. The authors, led by Rougoor et al. (1998), Trip (2000), as well as Johansson (2007), explain such approach with the fact that even the farmers having good personal characteristics can have unsatisfactory results if their decision making process is poor.

There are numerous studies worldwide in which the authors tried to explain the influences that certain aspects of management capacities have on success of farms, i.e. the effectiveness of the production - Ohlmer et al. (1998), Wilson et al. (1998 and 2001), Barkema et al. (1999), Solano et al. (2001a, 2001b and 2006), Trip et al. (2002), Passel et al. (2004), Adebayo, Adeola (2005), Mattil et al. (2007), Galanopoulos et al. (2006), Johansson (2007), Sharma et al. (1999), Sherif and Al-Kahtani (1999), to name but a few.

According to the authors' of this study knowledge, there are no studies concerning this topic in Serbia, at least not in the field of agriculture. There were some studies where authors analysed a variety of farmers' demographic characteristics (Novković et al., 2000)[3] and/or emphasized importance of their capabilities/skills and quality of decision making process (Lazarević, 2006; Popović, 2008; Vukelić, Novković, 2009; Janković et al., 2010; Marković, Tomaš, 2010)[4], but none of them has perceived the influences of the management capacities on effectiveness of agricultural production.

Aspects of management capacities

As mentioned above, management capacities can be defined "...as having the appropriate personal characteristics and skills to deal with right problems and opportunities in the right moment and in the right way."(Rougoor et al., 1998; Rougoor, 1999; Trip, 2000).

3 Novković et al. (2000) analysed, by perceiving the issue of possibility of development of agricultural production at the family farms, inter alia, the age and the educational structure of farmers.

4 Lazarević (2006) emphasized that a farmer have to be an educated businessman, ready to make decisions. Popović (2008) came to conclusion that some differences in business results among Serbian milk producers could not be explained other than as a difference in the quality of management. Vukelić and Novković (2009) variation in economic results of large milk producers in Vojvodina, operating under similar conditions, attributed to differences among farmers themselves, i.e. their capabilities and skills. Janković et al. (2010) insist on a new role of agricultural extension agents in the building of the farmers' capacities. Marković and Tomaš (2010) point out to the fact that the success of agricultural producers in the environment of severe competition, depends, among other, on their skills and knowledge.

Personal characteristics and capabilities of farmers, as a very significant aspect of management capacities comprise of drivers and motivations, which include, for e.g. objectives that one farmer wants to achieve, their attitudes relating takeover of risks, etc., abilities and capabilities of farmers, such as, power of perception and intellectual skills, as well as biography of farmers which includes demographic characteristics and experience in specific production (Rougoor et al., 1998).

However, a farmer/manager with a good personal characteristics, will not always have guaranteed success if his decision making process is not good. That means that, when examining the influence of management capacities on achieved results, beside farmers' personal (demographic) characteristics, decision making process also have to be observed.

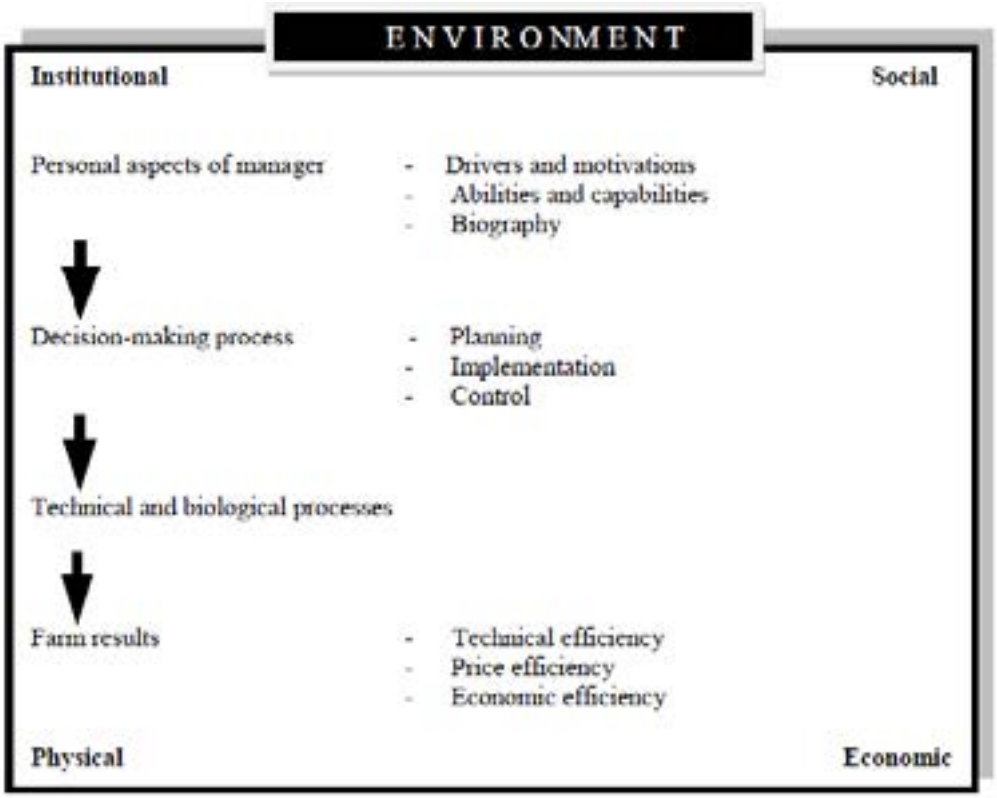
Farmers in general have the opportunity to make right business decisions, which will help them to achieve better results, by respecting well known steps in decision making process, such as planning, implementation and control. Kay et al. (2008) provide even more detailed division of decision making process, as follows:

1) Observing and defining the problem,
2) Collection of data and the information,
3) Finding and analysis of alternative solutions,
4) Decision making – choosing of the best alternative,
5) Execution (implementation) of decision,
6) Monitoring and analysis of the achieved results,
7) Taking responsibility for the decision.

Each of the listed steps requires from farmers/decision makers to precisely define priorities and timelines in decision making process, in order to avoid the stress caused by small and insignificant details, and which can lead to neglecting of important problems.

Rougoor and associates (1998) use very simple model to explain the relation between the management capacities, the environment, biological processes and the results achieved at the farm (Figure 1).

Figure1. Model of management capacities in relation to environment, biological processes and farm results



Source: Rougoor et al., 1998.

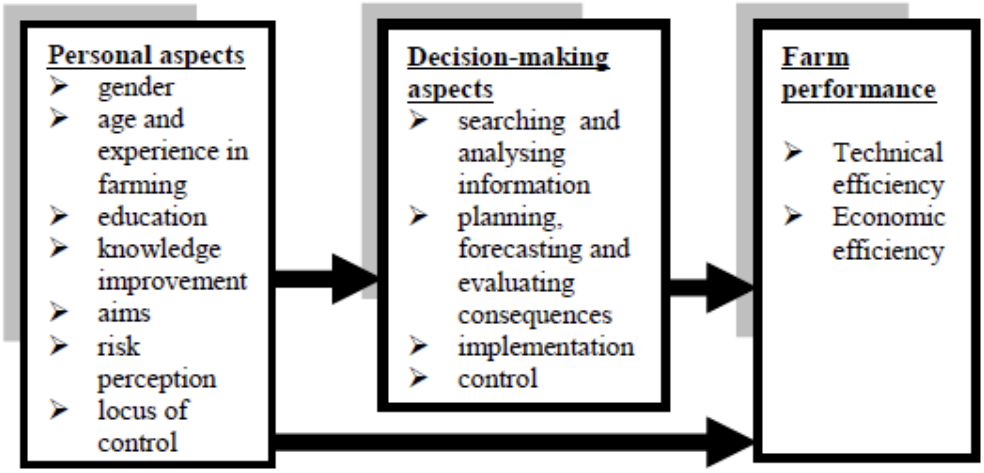
By respecting theirs, as well as the model given by Johansson (2007)[5], the aspects of management capacities and their influence on production and economic results can be presented in the following way (Figure 2).

Starting point is the farmer/manager, with specific personal characteristics. He tries, by appropriate business decisions, to optimize (or at least to influence) production and biological processes[6], which determine production and economic results on the farm. There are many factors which influence the achieved results (weather conditions, various diseases, used pesticides, fertilizers, market fluctuations (prices), etc.). The risks and uncertainties in the decision making process increases, to a great extent, the fact that farmer/manager executes his tasks within the changing environment, where the direction of such changes is unpredictable.

5 Also focused on farmers' decision making process and its influence on the achieved results.

6 Which can be controlled only to a certain (limited) extent.

Figure 2. The aspects of managerial capacities and their influence on farm results



Source: Authors' compilation of two abovementioned models.

Measuring managerial capacities issues

Previous agricultural studies have observed that among the farms operating under more or less similar environmental and economic conditions, the differences in management capabilities lead to differences in achieved results. However, the deserved attention has not been paid to the management capabilities until recently. That is a direct consequence of complexity of their assessment. Nuthall (2009) explains this with the fact that the "*people are difficult to be quantified*".

The aspects of farmers' personal characteristics, such as the age, the education, and the experience in farming can be assessed relatively easy. On the other hand, drivers and motivations, as well as the abilities and the capabilities of farmers are much more difficult to observe and assess (Huirne et al., 1997).That is why decision making process, from the viewpoint of management capacities, has not been sufficiently examined. Given the fact that a manager is not able to divide the time necessary for planning, implementation and control it is very difficult to assess decision making process in an explicit way. Thus, these activities must be formulated in such a way to enable differentiation and assessment, for e.g., the frequency and duration of advisor's visits, time spent in the planning of own production, time spent on processing and analysis of the achieved results, time spent in the meetings with the farm-workers, farmer's notion about the results of the competitors, etc. (Mintzberg, 1973). Trip and associates (2002), also raise the question about assessment of quality of the decision making process. They claim that it can be quantified through the objectives and the production policy, the quality of planning, the quality of keeping records and monitoring, as well as the quality of self-evaluation.

Conclusion

With the changes taking place within the modern agricultural production, it is becoming more and more difficult to maintain the competitive advantages. Thus, the farmers are progressively confronted with the requirements for certain management capacities which will enable them to utilise available resources in the best possible way, that is, to choose and implement the optimal production practice and to achieve best possible results.

Although management capacities are still rarely explicitly defined and quantified, especially when it comes to farmers, there are plenty of studies where authors analyse both personal characteristics of farmers and their decision making process, as well as their influence on the farm success.

Unfortunately, there is a lack of such research in Serbia. One can expect that the management capacities will be the significant field of research in the future, since their improvement is a precondition for improvement of competitiveness of Serbian agricultural production urgently needed in the process of European integration.

Acknowledgment

This paper is a result of the research within the projects III 31033 and III 046012, financed by the Ministry of Education, Science and Technological Development, Republic of Serbia.

Literature

1. Adebayo, O. O., Adeola, R. G. (2005): *Socio-Economics Factors Affecting Poultry Farmers in Ejigbo Local Government Area of Osun State*, Journal Human Ecology, Vol. 18, no. 1, pp. 39-41.
2. Barkema, H. W., Van der Ploeg, J. D., Schukken, Y. H., Lam, T. J. G. M., Benedictus, G., Brand, A. (1999): *Management style and its association with bulk milk somatic cell count and incidence rate of clinical mastitis*, Journal of Dairy Science, no. 82, pp. 1655-1663.
3. Case, H. C. M, Johnston, P. E. (1953): *Principles of farm management*, Chicago, etc.: J. B. Lippincott Company.
4. Garforth, C., Rehman, T. (2005): *Review of literature on measuring farmers' values, goals and objectives*, Project report no.2, available at: https://statistics.defra.gov.uk/esg/reports/Farmer%20Behaviour/...
5. Gasson, R (1973): *Goals and values of farmers*, Journal of Agricultural Economics, no. 24, pp. 521-542.
6. Galanopoulos, K., Aggelopoulos, S., Kamenidou, I., Mattas, K. (2006): *Assessing the effects of managerial and production practices on the efficiency of commercial pig farming,* Agricultural Systems, vol. 88, pp. 125-141
7. Heady, E. O. (1956): *The basic logic farm and home planning*, Journal of Farm Economics, no. 38, pp. 80-92.
8. Huirne, R. B. M., Harsh, S. B., Dijkhuizen, A. A. (1997): *Critical success factors and*

information needs on dairy farms: the farmer's opinion, Livestock Production Science, no. 48, pp. 229 – 238.

9. Janković, D., Petrović, Ž., Čikić, J. (2010): *Karakteristike savetodavnog procesa u radu sa odabranim gazdinstvima u Vojvodini*, Ekonomika poljoprivrede, vol. LVII, no. 2, pp. 257-273.
10. Johansson, H. (2007): *How can farmer managerial capacity contribute to improved farm preformance? A study of dairy farms in Sweden*, American Agricultural Economics Association Annual Meeting, Portland, OR, July 29 – August 1, available at: www.ageconsearch.umn.edu/bitstream/9874/1/sp07jo03.pdf
11. Johnson, G. L. (1976): *Philosophic foundations: problems, knowledge and solution*, European Review of Agricultural Economics, no. 3, pp. 207-234.
12. Kay, R. D, Edwards, W. M., Duffy, P. A. (2008): *Farm Management*, 6th Edition, McGraw Hill, Higher Education.
13. Lazarević, R. (2006): *Kako brže do profitabilnog stočarstva*, Vizartis, Beograd.
14. Marković, K., Tomaš, M. (2010): *Zakonodavno – pravini okvir kao jedan od uslova za razvoj poljoprivrednog savetodavstva*, Agroekonomika, br. 45-46, vol. 45-46, pp. 61-68.
15. Mattila, E., Tiina, A., Kaustell, O. K., Leppala, J., Hurme, T., Suutarinen, J. (2007): *Farmers' Perceptions of Necessary Management Skills in Finland*, The Journal of Agricultural Education and Extension, Vol. 13, no. 4, pp. 287-300.
16. Mintzberg, H. (1973): *The nature of managerial work*, New York, Harper & Row.
17. Novković, N., Ceranić, S., Bogdanov, N., Rodić, V. (2000): *Possibilities of agricultural production development at the family farms in Yugoslavia*, 70th EAAE seminar Problems and Prospects of Balkan Agriculture in a Restructuring Environment, Thessaloniki, Greece, pp. 97-104.
18. Nuthall, P. (2009): *Modelling the origins of managerial ability in agricultural production,* The Australian Journal of Agricultural and Resource Economics, Vol. 53, no. 3, pp. 413-436.
19. Öhlmér, B., Olson, K., Brehmer, B. (1998): *Understanding farmers' decision making processes and improving managerial assistance*, Agricultural Economics, no.18, pp. 273-290.
20. Passel, V. S., Lauwers, L., Huylenbroeck, V. G. (2004): *Factors of farm performance: an empirical analysis of structural and managerial characteristics*, Chapter 1, available at: www.fat.admin.ch/eaae96/abstracts/s23.pdf
21. Petrini, F. (1970): *The goals of farmers – A pilot study*, Supplement to International Journal of Agrarian Affairs, no.5, pp.175-184.
22. Popović, R. (2008): *Uticaj ekonomije veličine u proizvodnji mleka na komercijalnim porodičnim gazdinstvima u Srbiji*, Biotechnology in Animal Husbandry, 18th Symposium on Innovation in Animal Science and Production, Faculty of Agriculture, University of Belgrade, Institute of Zoo-technology, Belgrade, pp. 609-618.

23. Rougoor, C. W, Trip, G., Huirne, R. B. M, Renkema, J. A. (1998): *How to define and study farmers' management capacity: theory and use in agricultural economics*, Agricultural Economics, no. 18, pp. 261–272.

24. Rougoor, C. W. (1999): *Management, milk production level and economic performance, An explorative study on dairy farms*, Ph.D. - thesis, Wageningen University.

25. Sharma, K. R., Leung, P., Zaleski, H. M. (1999): *Technical, allocative and economic efficiencies in swine production in Hawaii: a comparison of parametric and nonparametric approaches*, Agricultural Economics, no. 20, pp. 23 – 35.

26. Sherif, S. A., Al Kahtani, S. H. (1999): *Managerial efficiency under risk for broiler producers in Saudi Arabia,* Agricultural Economics, no. 20, pp.69 – 74.

27. Solano, C., Leon, H., Perez, E., Herrero, M. (2001b): *Characterising objective profiles of Costa Rican dairy farmers*, Agricultural Systems, no. 67, pp. 153-179.

28. Solano, C., Leon, H., Perez, E., Herrero, M. (2001a): *Who makes farming decisions? A study of Costa Rican dairy farmers*, Agricultural Systems, no. 67, pp. 181-199.

29. Solano, C., Leon, H., Perez, E., Tole, L., Fawcett, R.H., Herrero, M. (2006): *Using farmer decision-making profiles and managerial capacity as predictors of farm management and performance in Costa Rican dairy farms*, Agricultural Systems no. 88, pp. 395-428.

30. Trip, G. (2000): *Decision making and economic performance of flower producers*, Ph.D. - thesis, Wageningen University.

31. Trip, G., Thijssen, G. J., Renkema, J. A., Huirne, R. B. M. (2002): *Measuring managerial efficiency: the case of commercial greenhouse growers*, Agricultural Economics, no. 27, pp. 175-181.

32. Vukelić, N., Novković, N. (2009): *Ekonomski rezultati proizvodnje mleka na krupnim seljačkim gazdinstvima*, Ekonomika poljoprivrede, no. 2009/1, Beograd, pp. 99-110.

33. Wilson, P., Hadley, D., Ramsden, S., Kaltsas, I. (1998): *Measuring and explaining technical efficiency in UK potato production*, Agricultural Economics, no. 49, pp. 294-305.

34. Wilson, P., Hadly, D., Asby, C. (2001): *The influence of management characteristics on the technical efficiency of wheat farmers in eastern England*, Agricultural Economics, no. 24, pp. 329-338.

MENADŽERSKI KAPACITETI FARMERA KAO FAKTOR USPEŠNOSTI POLJOPRIVREDNE PROIZVODNJE

Nataša Vukelić[7], Vesna Rodić[8]

Rezime

Između farmi koje posluju u manje-više sličnim prirodnim i društveno-ekonomskim uslovima često *postoje veoma značajne razlike u proizvodnim i ekonomskim rezultatima koje one postižu. Te razlike se najčešće mogu pripisati: biološkim faktorima, nivou specijalizacije i intenzivnosti proizvodnje, veličini farme i/ili proizvodnoj praksi koja se na farmi primenjuje. Smatra se da se razlike u postignutim rezultatima, tj. uspešnosti farme, mogu u velikoj meri objasniti i razlikama u sposobnostima samih farmera, odnosno njihovim menadžerskim kapacitetima, koji se mogu definisati kao posedovanje odgovarajućih ličnih karakteristika i sposobnosti farmera, odnosno menadžera, da se suoče sa određenim problemima i mogućnostima na pravi način i u pravom trenutku.*

Sa promenama koje zahvataju savremenu poljoprivrednu proizvodnju, sve je teže održavati konkurentsku prednost, pa farmeri sve više moraju imati određene menadžerske kapacitete koji će im omogućiti da, na najbolji mogući način, iskoriste raspoložive uslove, odnosno odaberu i primene optimalnu proizvođačku praksu. Menadžerski kapaciteti se dosta retko ekspicitno definišu i kvantifikuju, posebno kada su poljoprivredni proizvođači u pitanju, stoga je cilj ovog rada upravo da ukaže na značaj menadžerskih kapaciteta farmera i da da pregled dosadašnjih istraživanja u ovoj oblasti.

Ključne reči: *menadžerski kapaciteti, farmeri, poljoprivredna proizvodnja.*

7 Nataša Vukelić, M.A., asistent, Univerzitet u Novom Sadu, Poljoprivredni fakultet, Departman za ekonomiku poljoprivrede i ruralnu sociologiju, Trg Dositeja Obradovića 8, 21000 Novi Sad, Srbija, Telefon: +381 21 485 39 92, E-mail: vukelicn@polj.uns.ac.rs

8 Prof. dr Vesna Rodić, Redovni profesor, Univerzitet u Novom Sadu, Poljoprivredni fakultet, Departman za ekonomiku poljoprivrede i ruralnu sociologiju, Trg Dositeja Obradovića 8, 21000 Novi Sad, Srbija, Telefon: +381 21 485 33 13, E-mail: rodicv@polj.uns.ac.rs

DETAIL INSTRUCTIONS TO AUTHORS WITH TEMPLATE FOR THE ARTICLES THAT WILL BE PUBLISHED IN JOURNAL ECONOMICS OF AGRICULTURE

The ECONOMICS OF AGRICULTURE is an international scientific journal, published quarterly by Balkan Scientific Association of Agricultural Economists (BSAAE) in cooperation with Institute of Agricultural Economics Belgrade (IAE) and Academy of Economic Studies Bucharest (ASE), in which are published original scientific papers (double reviewed), review articles, pre-announcements, book reviews, short communications and research reports. Research reports and book reviews will be accepted after previous consultation/invitation with/from either a journal Editor, or Editor of the book review, in accordance with the journal submission criteria.

The journal ECONOMICS OF AGRICULTURE accepts only articles submitted electronically on English language, as e-mail attachment to the following e-mail address: economicsofagriculture@ea.bg.ac.rs and epoljoprivrede@gmail.com

The articles have to be submitted in duplicate, providing one copy without information about author(s), in order not to violate double-blind review process. In the second copy of the article must be specified all information about author(s) (in required format) that are necessary for further correspondence and full transparency of published article.

Submission of articles to the ECONOMICS OF AGRICULTURE implies that their content has not been published previously in English, or in any other language. Also, submitted papers should not be under consideration for their publication elsewhere (in some other journal) and their publication has to be approved by all authors with signed declaration. Publisher reserves right to verify originality of submitted article by use of specialized software for plagiarism detection.

REVIEW PROCESS

The articles submitted to the journal ECONOMICS OF AGRICULTURE will be double blind (peer) reviewed and must have two positive reviews consistent to the generally accepted scientific standards. The reviewer independently and autonomously evaluates the article and could give a positive review, suggest some corrections, or give a negative review. In case that the review reports are antagonistic (one is positive and the second one is negative) the final decision will be on third review. Manuscript returned to the author(s) for revision does not guarantee the publication acceptance after article correction. The final decision for publication will be made after repeated review of the revised manuscript. If the article is evaluated positively and accepted for publication, each author has to sign the warranty of paper originality and confirm the copyright transfer to the journal ECONOMICS OF AGRICULTURE.

RULES FOR TECHNICAL PREPARATION OF ARTICLES

These Instructions will give all necessary information to author(s), as well as template for the articles preparation before their submission for publication in the journal Economics of Agriculture. We are asking you to use this document with a maximal attention, in other words to realize it as a set of instructions and practical example that will contribute to easier and more efficient operation under your article within the all phases of journal editing. Articles that deviate from mentioned template are not be taken into consideration.

Page setup: Paper size: *width* 170 mm x *height* 240 mm; **Margins**: top/bottom 20 mm, left/right 18 mm; **Layout:** *header* 1,25cm, *footer* 1,25cm; **Orientation:** Portrait. Paper volume up to 30.000 characters (without spaces) or 15 pages is preferable. Articles should not be shorter than 10 pages. Depending on papers' quality, Editorial Board could also accept longer articles. Article has to be prepared electronically (on computer), in program **Microsoft Word XP** or some later version of this program.

Below is a detail **Template** (technical instructions) for correct preparation of articles that will be submitted to the journal Economics of Agriculture. You are asked to maximum possible follow the technical instruction given by the following template.

TEMPLATE: TITLE OF THE ARTICLE (CENTRED, TNR, SIZE 12, BOLD, ALL CAPITAL LETTERS, MAXIMUM IN TWO LINES)[1]

Anđela Marković[2], Petar Petrović[3], Mirko Mirković[4]

Summary

It is desirable that Summary contains up to 150 words, as well as to contain all essential paper elements, such as goal(s), used method(s), important results and general authors' conclusion(s).

During the summary writing, it should be used font Times New Roman (TNR), font size 11, Italic, alignment text Justify, line spacing single, with interspace of 6 pt between paragraphs, without indentation of the first line.

Please, avoid the use of the indexes and special symbols within the Summary, and define all abbreviations whenever they are used for first time. Do not cite references in Summary.

Author(s) from Serbia are submitting article title, summary, key words and information about themselves on Serbian language at the end of the article, after the list of used literature. Text of the Serbian and English version of Summary must match in every sense.

Key words: *note, maximally, five, key, words.*

JEL: *Q16, M24* (www.aeaweb.org/jel/jel_class_system.php)

1 Paper is a part of research within the project no. III 46006 - Sustainable agriculture and rural development in the function of accomplishing strategic objectives of the Republic of Serbia in the Danube region, financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia. Project period: 2011-2014. ***This segment is not obligatory within the paper***.

2 Anđela Marković, Ph.D., Principal Research Fellow, Institute of Agricultural Economics, Volgina Street no. 15, 11060 Belgrade, Serbia, Phone: +381 11 444 444/int 112, E-mail: andjela.markovic@iep.bg.ac.rs

3 Petar Petrović, Ph.D., Full Professor, University of Belgrade, Faculty of Agriculture, Nemanjina Street no. 6, 11080 Zemun, Serbia, Phone: +381 11 222 222, E-mail: petar.petrovic@gmail.com

4 Mirko Mirković, M.A., Assistant, University in Belgrade, Faculty of Forestry, Kneza Viseslava Street no. 1, 11000 Belgrade, Serbia, Phone: +381 64 33 33 333, E-mail: mirko.mirkovic@yahoo.com

Introduction

Please strictly follow the instructions on article formatting, as well as styles provided in this template. Do not change font size, interspace between paragraphs and line spacing to insert more text into a conditionally limited number of pages.

Editorial Board organizes process of review of submitted articles and selects papers for publication based on the performed review, in other words according to estimated quality of the articles by the appointed reviewers. However, the ultimate responsibility for the views, originality and stands within the articles is exclusively on author(s) of manuscripts.

Please follow the basic principles of scientific papers structuring and try as much as possible to write a paper with next segments: Introduction, Paper goals, Data sources, Methodology, Results with Discussion, Conclusion (with Recommendations), Literature, etc.

During the article writing, it should be used font **Times New Roman** (TNR), **font size 11**, alignment text **Justify**, **Line Spacing Single**, with **interspace of 6 pt between paragraphs**, **without indentation of the first line**. Articles should be written only in English. It is advisable to write the article in the third-person singular or plural with the use of active form. Before paper submission, please check grammatical and spelling mistakes by the spellchecker for the English language.

Sub-headings should be written by font **Times New Roman**, **font size 11**, **bold**, **centred**, only first letter capital, interspace between sub-heading and paragraph above 12 pt (**before 12 pt**), and interspace between sub-heading and paragraph below 6 pt (**after 6 pt**). Please use the writing style presented in this template.

Please define **abbreviations and acronyms** during their first occurrence within the text, even in case that they were previously defined in article summary. Do not use abbreviations in article title, unless they can not be avoided.

For **equations and formulas** use the Microsoft Equation Editor or addition for equations writing MathType (www.mathtype.com). Use of built-in equation editor within the program Word 2007 is not recommended. Please check if all symbols within the equations/formulas are defined (forthwith after equation/formula).

Reference (author(s) of quotes) has to be entered directly in the text of article in next form (Petrović, 2012; or Petrović, Marković, 2012; or Mirković et al., 2012). Please do not write them as indexes in square brackets [3] or in footnote. Try to use a footnote only in the case of closer explanation of certain terms, or clarification of real and hypothetic situations. Do not numerate the pages.

Tables have to be created within the text of article, not taken in the form of images from other documents. Tables should be numerated according to order of their appearance. Titles of the tables have to be given immediately above the table to which they relate.

Please use following style during their formatting. Title of the table should be set with the interspace 6 pt - before and 3pt - after, in font TNR, font size 11, alignment Justified. Text within the table should be written in the font TNR, font size 9. Bold the text in the heading. Sources and possible notes should be set with the interspace 3 pt above table (before). Sources and notes should be written in font TNR, font size 10, alignment Justified. Start with next paragraph at the interspace of 6 pt from the table source or note (after). During the article writing please mark in the main text all calls to a certain table (*Table 5*.). Try to fit all tables in article within the specified format of the page (Table properties – preferred width – max 97% - alignment: center). Complete text within the table cells has to be entered in next form (paragraph - spacing: before/after 0 pt, line spacing: single). In case when table breaks on next page, broken part of the table on next page has to be accompanied by a table header.

Table 5. The distribution cost of packaged goods from Subotica to retail-store objects

Indicators	Period			Total
	Month 1	Month 2	Month 3	
Distance crossed (km)	12.926	11.295	13.208	37.429
Fuel consumption (litre)	3.231	2.823	3.302	9.356
Value of fuel consumption (RSD)	242.378	211.790	247.653	701.821
Total time spend on touring (hour)	314	266	417	997
Value of total time spend on touring (RSD)	47.048	39.890	62.570	149.508
Number of tours	98	77	102	277
Toll value (RSD)	0	0	0	0
Number of pallets transported (piece)	1.179	976	1358	3.513
Total weight transported (kg)	602.600	429.225	711.116	1.742.941
Vehicle maintenance costs (RSD)	203.858	164.970	224.806	593.634
Lease costs (RSD)	480.938	454.214	565.784	1.500.936
Total sum (RSD)	974.222	870.864	1.100.813	2.945.899

Source: Petrović, 2012;
Note: Values within the table are calculated without Value Added Tax (VAT)

Graphs, dendrograms, diagrams, schemes and pictures should be entered within the text of article (do not use option Float over text) and numerated according to order of their appearance. Their titles have to be positioned immediately above the graph, dendrogram, diagram, scheme or picture to which they relate. Please, have in mind that all titles, sources and notes have to be written by identical style which was used for tables formatting. During the article writing please mark in the main text all calls to a certain graph, dendrogram, diagram, scheme or picture (*Graph 2*.). All graphs, dendrograms, diagrams, schemes and pictures within the paper have to fit the specified format of the page, as well as they have been centrally positioned. Photos and images are not desirable in the paper, but if they can not be avoided, please use an optimal resolution (low resolution can bring to pixelization and worn edges, while to high resolution only increase file size without any contribution to article readability).

During the writing of the article conclusion, please have in mind that **Conclusion** can provide a concise overview of the main results of the article. Do not repeat parts of Summary in this place. Conclusion can explain the importance of article, or it can give recommendations for further action, or it can suggest further work on exposed theme.

Literature has to be set at the end of article (for authors from Serbia before summary in Serbian language), in alphabetical order, according to the author's surname. ***All references should be cited in original language (in the language on which are published before), in the volume in which are used within the manuscript preparation.*** Literature units have to be written in font TNR, font size 11, alignment Justified, with mutual interspace of 3 pt - before/after. In all literature units only surnames are written as a whole, while all authors' names has to be shorten on to initial (initials have to be set after surnames). Please, write surnames of all authors (do not use the style Petrović et al.). Do not combine literature units (under each ordinal number can be only one literature unit) and always write complete titles of used literature units. If used/cited literature was taken over from the internet publication, after adequate writing of literature unit, in brackets has to be noted complete link from which material was taken over (available at: www.petarpetrovic.pdf). Please follow the presented examples for the proper writing of different types of literature units.

Literature

1. Marković, A. (year): *Title of the Book,* Publisher, City of Publisher, Country of Publisher.
2. Petrović, P., Mirković, M. (year): *Title of the book chapter*, in Book – title of the book, ch. no. x, pp. xxx–xxx, Publisher, City of Publisher, Country of Publisher.
3. Petrović, P., Mirković, M., Marković, A. (year): *Title of the paper*, Title of Journal, vol. x, no. x, pp. xxx-xxx, Publisher, City of Publisher, Country of Publisher, (available at: www.petarpetrovic.pdf).
4. Petrović, P., Mirković, M. (year): *Title of the conference paper/presentation*, Proceedings from the conference - Title of the conference, City, Country, vol. xx, pp. xx-xx.
5. Marković, A. (or name/abbreviation of the Institution/company, for example FAO/UN/IAE) (year): *Title of report/yearbook*, no. of report xxx, City and Country of publisher/institution/company, (available at: www.fao.org/pdf).
6. Petrović, P., Mirković, M. (date): *Title of the newspaper article*, Newspaper title, City, Country, no. xx, (available at: www.politika. com/nauka/20%/srbija).
7. Petrović, P. (year): *Title of Ph.D. dissertation*, Ph.D. dissertation, Name of Faculty, Name of University, City, Country.
8. Marković, A. (or name/abbreviation of the Institution/company that develop patent, for example Faculty of Agriculture/IAE) (year): *Title of the patent*, Name of the institution that was registered patent, reg. no. of patent x xxx xxx, City, Country.
9. *Title of the Law/regulation*, Official Gazette, Country, no. and year.
10. *Title of Standard*, Standard no. xxx, standard developer, year, City, Country.

DETALJNO UPUTSTVO AUTORIMA I ŠABLON ZA RADOVE KOJI SE OBJAVLJUJU U ČASOPISU EKONOMIKA POLJOPRIVREDE

EKONOMIKA POLJOPRIVREDE je međunarodni naučni časopis, koji kvartalno publikuje Naučno društvo agrarnih ekonomista Balkana (NDAEB) u saradnji sa Institutom za ekonomiku poljoprivrede iz Beograd (IEP) i Univerzitetom ekonomskih nauka iz Bukurešta (ASE). U časopisu se publikuju originalni naučni radovi (dvaputa recenzirani), pregledni članci, prethodna saopštenja, prikazi knjiga, kratki osvrti i izveštaji istraživanja. Izveštaji istraživanja i prikazi knjiga se prihvataju nakon prethodne konsultacije/poziva od strane urednika časopisa, ili urednika prikaza knjige, usklađeni sa ktiterijumima podnošenja radova.

Časopis EKONOMIKA POLJOPRIVREDE prihvata samo radove na engleskom jeziku, podnešene E-mejlom (kao attachment) na adresu: economicsofagriculture@ea.bg.ac.rs i epoljoprivrede@gmail.com

Radovi se dostavljaju u duplikatu, s tim da se na jednom primerku uklonjeni podaci o autorima, kako se ne bi narušio proces anonimnosti recenzije. U drugom primerku rada navode se sve informacije o autorima (u zahtevanom obliku) neophodne za dalju korespodenciju i punu transparentnost publikovanog rada.

Radovi koji se dostavljaju časopisu EKONOMIKA POLJOPRIVREDE moraju posedovati sadržaj istraživanja koja prethodno nisu publikovana na engleskom ili nekom drugom jeziku. Takođe, podnešeni radovi ne smeju biti u procesu razmatranja za publikovanje u nekom drugom časopisu, te njihova publikacija mora biti odobrena od strane svih autora potpisanom izjavom. Izdavač zadržava pravo provere originalnosti dostavljenog rada specijalizovanim softverom za otkrivanje plagijata.

PROCES RECENZIJE

Radovi podnešeni časopisu EKONOMIKA POLJOPRIVREDE podležu duploj anonimnoj (double-blind) recenziji i moraju imati obe pozitivne recenzije usaglašene sa opšteprihvaćenim naučnim standardima. Recenzent samostalno i anonimno ocenjuje rukopis, te može dati pozitivnu recenziju, predlog dorade rada, ili negativnu recenziju. U slučaju antagonističnih recenzija (jedna je pozitivna, a druga negativna) konačna odluka se donosi na osnovu treće recenzije. Rad vraćen autorima na ispravku ne garantuje njegovo objavljivanje po urađenim korekcijama. Konačna odluka o publikovanju će biti donešena nakon ponovljenog procesa recenzije rukopisa. Ukoliko je rad pozitivno ocenjen i prihvaćen za publikovanje, svaki od autora mora potpisati garanciju originalnosti rada i odobrenje za prenos autorskih prava na časopis EKONOMIKA POLJOPRIVREDE.

PRAVILA TEHNIČKE PRIPREME RADOVA

Ovo uputstvo za autore daje sve neophodne informacije, kao i šablon za pripremu radova pre podnošenja za publikovanje u časopisu Ekonomika poljoprivrede. Molimo Vas da maksimalno pažljivo pristupite korišćenju ovog dokumenta, odnosno da ga shvatite kao skup uputstava i praktičan primer koji u mnogome doprinosi lakšoj i efikasnijoj manipulaciji nad Vašim radom u svim fazama uređivanja časopisa. Radovi koji odstupaju od datog šablona se neće uzimati u razmatranje.

Format strane (paper size): *Width* 170 mm x *Height* 240 mm; **Margine**: gore/dole 20 mm, levo/desno 18 mm; **Layout:** *Header* 1,25cm, *Footer* 1,25cm; **Orientation:** Portrait. Preferira se **obim radova** do maksimalnih 30.000 karaktera (bez razmaka), odnosno 15 stranica. Radovi ne bi trebalo da budu kraći od 10 stranica. U zavisnosti od kvaliteta rada Uredništvo može prihvatiti i duže radove. Molimo Vas da radove pripremate na računaru u programu **Microsoft Word XP** ili nekoj kasnijoj verziji ovog programa.

U nastavku sledi detaljan **Šablon** (tehničko uputstvo) za pravilnu pripremu radova za časopis Ekonomika poljoprivrede. Molimo Vas da maksimalno moguće poštujete tehnička pravila data sledećim šablonom.

ŠABLON: NASLOV RADA (CENTRIRAN, TNR SIZE 12, BOLD, SVA SLOVA VELIKA, MAKSIMALNO DVA REDA)[1]

Anđela Marković[2], Petar Petrović[3], Mirko Mirković[4]

Summary

Poželjno je da rezime sadrži do 150 reči, te da sadrži sve bitne činjenice rada, poput cilja rada, korišćene metode, najvažnijih rezultata i osnovnih zaključaka autora.

Tokom pisanja rezimea treba koristiti slova Times New Roman (TNR), veličina fonta (font size) 11, Italic, ravnanje teksta Justify, a tekst rezimea pisati bez proreda (Line Spacing Single), sa razmakom od 6 pt između pasusa, bez uvlačenja prvog reda.

Izbegavajte korišćenje indeksa i specijalnih simbola u apstraktu, odnosno definišite sve skraćenice u apstraktu kada se prvi put upotrebe. Nemojte citirati reference u apstraktu.

Autori iz Srbije šalju naslov rada, rezime rada, ključne reči i podatke o sebi i na srpskom jeziku na kraju rada, ispod listinga korišćene literature. Tekst srpske i engleske verzije apstrakta i ključnih reči se moraju podudarati u svakom pogledu.

Key words: *navesti, maksimalno, pet, ključnih, reči.*

JEL: *Q16, M24* (www.aeaweb.org/jel/jel_class_system.php)

1 Paper is a part of research within the project no. III 46006 - Sustainable agriculture and rural development in the function of accomplishing strategic objectives of the Republic of Serbia in the Danube region, financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia. Project period: 2011-2014. ***Ovaj segment nije obligatoran u radu***.

2 Anđela Marković, Ph.D., Principal Research Fellow, Institute of Agricultural Economics, Volgina Street no. 15, 11060 Belgrade, Serbia, Phone: +381 11 444 444/int 112, E-mail: andjela.markovic@iep.bg.ac.rs

3 Petar Petrović, Ph.D., Full Professor, University of Belgrade, Faculty of Agriculture, Nemanjina Street no. 6, 11080 Zemun, Serbia, Phone: +381 11 222 222, E-mail: petar.petrovic@gmail.com

4 Mirko Mirković, M.A., Assistant, University in Belgrade, Faculty of Forestry, Kneza Viseslava Street no. 1, 11000 Belgrade, Serbia, Phone: +381 64 33 33 333, E-mail: mirko.mirkovic@yahoo.com

Introduction

Molimo Vas da striktno poštujete uputstva o formatiranju i stilove date u ovom šablonu. Ne menjajte veličinu fonta ili razmak redova da biste ubacili više teksta u uslovno ograničeni broj stranica.

Uredništvo organizuje proces recenziranja pristiglih radova i vrši odabir radova za publikovanje na osnovu urađenih recenzija, odnosno procenjenog kvaliteta radova od strane imenovanih recezenata. Međutim, krajnja odgovornost za poglede, originalnost i tvrdnje iznete u radovima počiva isključivo na autorima rada.

Molimo Vas da poštujete osnovna načela strukturiranja naučnih radova, odnosno trudite se koliko je to moguće da Vaš rad ima sledeće segmente: Uvod, Cilja rada i korišćena metodologija, Rezultati rada sa diskusijom, Zaključak, Literatura.

Tokom pisanja rada treba koristiti slova **Times New Roman (TNR)**, veličina fonta **(font size) 11**, ravnanje teksta **Justify**, a tekst rada pisati bez proreda (**Line Spacing Single**), sa razmakom od **6 pt između pasusa**, **bez uvlačenja prvog reda**. Radovi se pišu isključivo na engleskom jeziku. Preporučljivo je rad pisati u trećem licu jednine ili množine uz korišćenje aktivnog oblika. Pre slanja rada, obavezno proveriti pravopisne greške putem spellchecker-a za engleski jezik.

Podnaslovi se pišu fontom **Times New Roman**, veličina fonta (**font size**) **11**, **bold**, **centrirano**, samo prvo slovo veliko, razmak podnaslova i teksta iznad 12 pt (**before 12 pt**), a razmak podnaslova i teksta ispod 6 pt (**after 6 pt**). Molimo Vas koristiti prikazani stil pisanja u ovom šablonu.

Molimo Vas da definišete **skraćenice i akronime** prilikom prvog pojavljivanja u tekstu rada, čak i u slučaju da su već bili definisani u apstraktu rada. Ne koristite skraćenice u naslovu rada osim ukoliko se one apsolutno ne mogu izbeći

Radi unosa **jednačina i formula** u rad, koristite Microsoft Equation Editor ili dodatak za pisanje jednačina MathType (www.mathtype.com). Ne preporučuje se korišćenje ugrađenog editor jednačina iz programa Word 2007. Proverite da li ste definisali sve simbole u jednačini (neposredno posle jednačine).

Reference (autori citata) se navode direktno u tekstu rada u sledećem obliku (Petrović, 2012; ili Petrović, Marković, 2012; ili Mirković et al., 2012). Ne navodite ih kao indekse u četvrtastoj zagradi [3] ili u fusnoti. Trudite se da fusnotu koristite samo u slučaju bližih objašnjenja određenih pojmova, odnosno razjašnjenja realnih ili hipotetičkih situacija. Nemojte vršiti numeraciju stranica.

Tabele moraju biti formirane u tekstu rada, a ne preuzete u formi slika iz drugih materijala. Tabele unositi u sam tekst rada i numerisati ih prema redosledu njihovog pojavljivanja. Nazivi tabela moraju biti dati neposredno iznad tabele na koju se odnose. Koristite dole prikazani stil tokom njihovog formatiranja. Naslov tabela pisati sa razmakom 6 pt – iznad/before i 3pt – ispod/after, u fontu TNR, font size 11, ravnanje Justified. Tekst unutar tabela pisati fontom TNR, font size 9. Tekst u zaglavlju tabela boldirati. Izvor i potencijalne napomene pisati sa razmakom 3 pt ispod tabela (before). Izvore i napomene pisati u fontu TNR, font size 10,

ravnanje Justified. Naredni pasus početi na razmaku od 6pt od izvora tabele ili napomene (after). Tokom pisanja rada u originalnom tekstu treba markirati poziv na određenu tabelu (*Table 5*.). Trudite se da se sve tabele u radu veličinom uklapaju u zadati format strane (Table properties – preferred width – max 97% - alignment: center). Sav tekst u poljima tabele treba unositi u formi (paragraph – spacing: before/after 0pt, line spacing: single). U slučaju da se tabela lomi na narednu stranicu, molimo Vas da prelomljeni deo tabele na narednoj stranici bude propraćen zaglavljem tabele.

Table 5. The distribution cost of packaged goods from Subotica to retail-store objects

Indicators	Period			Total
	Month 1	Month 2	Month 3	
Distance crossed (km)	12.926	11.295	13.208	37.429
Fuel consumption (litre)	3.231	2.823	3.302	9.356
Value of fuel consumption (RSD)	242.378	211.790	247.653	701.821
Total time spend on touring (hour)	314	266	417	997
Value of total time spend on touring (RSD)	47.048	39.890	62.570	149.508
Number of tours	98	77	102	277
Toll value (RSD)	0	0	0	0
Number of pallets transported (piece)	1.179	976	1358	3.513
Total weight transported (kg)	602.600	429.225	711.116	1.742.941
Vehicle maintenance costs (RSD)	203.858	164.970	224.806	593.634
Lease costs (RSD)	480.938	454.214	565.784	1.500.936
Total sum (RSD)	974.222	870.864	1.100.813	2.945.899

Source: Petrović, 2012;
Note: Values within the table are calculated without Value Added Tax (VAT)

Grafike, dendrograme, dijagrame, šeme i slike treba unositi u sam tekst rada (ne koristiti opciju Float over text) i numerisati ih prema redosledu njihovog pojavljivanja. Njihovi nazivi se moraju pozicionirati neposredno iznad grafika, dendrograma, dijagrama, šeme ili slike na koju se odnose. Kod navođenja naslova, izvora i napomena koristiti isti stil koji je predhodno prikazan za formiranje tabela. Tokom pisanja rada u originalnom tekstu treba markirati pozive na određeni grafik, dendrogram, dijagram, šemu ili sliku (*Graph 2*.). Svi grafici, dendrogrami, dijagrami, šeme i slike u radu se svojom veličinom moraju uklapati u zadati format strane, te moraju biti centralno postavljeni. Fotografije nisu poželjne u predmetnom radu, a ukoliko se one ne mogu izbeći molimo Vas da koristite optimalnu rezoluciju (preniska rezolucija dovodi do pikselacije i krzavih ivica, dok previsoka samo povećava veličinu fajla bez doprinosa čitljivosti rada).

Kod pisanja zaključka rada, molimo Vas imajte na umu da iako **Zaključak** može dati sažeti pregled glavnih rezultata rada, nemojte ponavljati apstrakt na ovome mestu. Zaključak može objasniti značaj rada, dati preporuke za dalje delovanje ili predložiti dalji rad na obrađivanoj temi.

Literatura se navodi na kraju rada (kod autora iz Srbije pre rezimea na srpskom jeziku), abecednim redom, prema prezimenu autora. ***Molimo Vas da reference navodite u originalu (na jeziku na kome su objavljene) u obimu u kom su korišćene/citirane tokom pisanja***

rada. Literaturu navoditi u fontu TNR, font size 11, ravnanje Justified, sa međusobnim razmakom 3pt – iznad/before i 3pt – ispod/after. U svim literaturnim jedinicama samo se prezimena daju u punom obimu, dok se sva imena autora skraćuju na inicijal i stavljaju posle prezimena. Molimo Vas da navodite prezimena svih autora, a ne da koristite stil navođenja Petrović et al. Nemojte kombinovati literaturne jedinice (pod jednim rednim brojem može biti samo jedna referenca) i uvek pišite pune naslove u radu korišćenih literaturnih jedinica. Ukoliko je korišćena/citirana literatura preuzeta iz internet publikacija, posle pravilno izvršenog imenovanja literaturne jedinice u zagradi se mora navesti kompletan link sa koga je materijal preuzet (available at: www.petarpetrovic.pdf). Molimo Vas pridržavajte se dole navedenih primera navođenja različitih tipova literaturnih jedinica i referenci.

Literature

1. Marković, A. (godina izdanja): *Naslov knjige,* Izdavač, Mesto i Zemlja izdavača.
2. Petrović, P., Mirković, M. (godina izdanja): *Naslov poglavlja u knjizi*, u knjizi – Naslov knjige, ch. br. x, str. xxx–xxx, Izdavač, Mesto i Zemlja izdavača.
3. Petrović, P., Mirković, M., Marković, A. (godina izdanja): *Naslov rada*, Časopis, vol. x, br. x, str. xxx-xxx, Izdavač, Mesto i Zemlja izdavača, (dostupno na: www.petarpetrovic.pdf).
4. Petrović, P., Mirković, M. (godina izdanja): *Naslov konferencijskog rada/prezentacije*, Zbornik radova sa konferencije – Naziv konferencije, Mesto, Zemlja, vol. xx, str. xx-xx.
5. Marković, A. (ili ime/skraćenica Institutcije/Kompanije, na primer FAO/United Nations/IEP) (godina izdanja): *Naslov izveštaja/godišnjaka,* br. izveštaja xxx, Mesto i Zemlja izdavača/institucije/kompanije, (dostupno na: www.fao.org/pdf).
6. Petrović, P., Mirković, M. (godina izdanja): *Naslov novinskog članka*, Naziv novina, Mesto, Zemlja, br. xx, (dostupno na: www.politika. com/nauka/20%/srbija).
7. Petrović, P. (godina izdanja): *Naslov doktorske disertacije*, doktorska disertacija, Fakultet, Univerzitet, Mesto, Zemlja.
8. Marković, A. (ili ime/skraćenica Institucije/Kompanije koja je razvila patent, na primer Poljoprivredni fakultet/IEP) (godina registracije patenta): *Naziv patenta*, Institucija koja je registrovala patent, reg. br. patenta - x xxx xxx, Mesto, Zemlja.
9. *Naziv zakona/uredbe*, Službeni glasnik, Zemlja, br. i godina izdanja.
10. *Naziv standarda*, Standard br. xxx, izdavač standarda, godina izdanja, Mesto, Zemlja.

Technical preparation, prepress and printing:
DIS PUBLIC D.O.O., Braće Jerković 111-25, Belgrade, phone/fax: 011/39-79-789

Number of copies:
300 copies

Published quarterly

Journal is registered in major scientific databases:

- EBSCO,
- AgEcon Search,
- Social Science Research Network (SSRN),
- ProQuest,
- Ulrich's Periodicals Directory,
- CABI,
- J-Gate,
- The World Wide Web Virtual Library for European Integration,
- SCIndeks,
- EconLit

Journal is indexed in major scientific databases:

- Index Copernicus Journals Master List (ICV2012: 5,12).

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

33:63(497.11)

ЕКОНОМИКА пољопривреде = Economics of Agriculture / editor-in-chief Drago Cvijanović. - Год. 26, бр. 5 (1979)- . - Београд : Научно друштво аграрних економиста Балкана : Институт за економику пољопривреде ; Букурешт : Академија економских наука, 1979- (Belgrade : Dis Public). - 24 cm

Тромесечно. - Је наставак: Економика производње хране = ISSN 0352-3454. - Друго издање на другом медијуму: Економика пољопривреде (Online) = ISSN 2334-8453
ISSN 0352-3462 = Економика пољопривреде (1979)
COBISS.SR-ID 27671

The Ministry of Education, Science and Technological Development of the Republic of Serbia provides financial support for publishing of the quarterly journal ECONOMICS OF AGRICULTURE