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CONTENT

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SOCIAL CHANGES IN RURAL AREAS: INCOMES AND EXPENDITURES OF RURAL HOUSEHOLDS

Paweł Chmieliński[1], Barbara Chmielewska[2]

Summary

In the study we analyse changes in the level and structure of income and expenditure of households in rural and urban areas during the period of Polish integration with the European Union. This allows to answer the question of whether and how the social distance divides the residents of the rural and urban areas. The results showed improvement in economic and social situation in the rural areas. The living gap between rural residents and urban residents decreased. In the structure of incomes of rural households, the share of income from non-agricultural sources increased and at the same time the share of expenditure on food in total expenditure was smaller. However, the differences are still significant. The challenge for rural development policy is to reduce the gap between rural and urban areas, especially in terms of quality of life. This requires further development of non-agricultural jobs in rural areas.

Keywords: incomes, consumption, rural households, rural areas, Poland

JEL: *Q12, O18, D11*

Introduction

In the past, numerous researchers perceived rural areas mainly from the viewpoint of agriculture and food economy. They focused on agriculture and their research concerned, above all, land use, agrarian structure, labour input and structure of agricultural production. There were also studies on demographic problems (Stasiak, 1983). A special place in the contemporary rural research is reserved for research of social space, in particular conditions and standards of life of social groups and the term "rural" is increasingly often interpreted as the world of social, moral and cultural phenomena and processes involving rural residents (Wójcik, 2009).

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In Great Britain, there is even a vision of "rural idyll" expressing longing of a modern man for a harmonious life in a friendly natural and social environment, close to nature and rich in everyday human relations. Unfortunately, the idyllic image of the rural areas is often contrasted with the peripheral rural areas characterised by population aging, migration outflow, social exclusion, anti-social behaviours, poverty and lack of development perspectives (Bański, 2014). Popularisation of transport, tourism and leisure increased interest in economic and social problems of rural areas. What definitely increased, was the interest in the problems of rural population and rural development covering such issues as residential construction, transport, access to water supply and sewage systems, leisure time and environmental protection. The rural areas today form a complex system of interconnected natural, social and economic elements, as well as (or rather, first of all) a place of work and life of humans (Bański, 2014, Sikorska et al., 2009). Thus, science also asks which societies form rural areas, and how rural space is perceived (Philips, 1998).

The presented research aims in analysis of the change in the economic situation and, consequently, social situation of rural population and its comparison to the situation of urban residents. We attempt to answer the following questions: How deep is the socio-economic gap between the rural and urban residents in terms of incomes and consumption? Which households, farming or non-farming families, form the contemporary rural economy? What changed in this scope as a result of Poland's accession to the European Union?

The analysis was conducted primaly on the basis of empirical data from Polish Central Statistical Office's household budgets survey. As the basic determinant of economic and social situation of the population the study adopts the level and structure of household expenditure on urban and rural areas and then, on the basis of changes in the level and structure of expenditure, assessed the changes in their social situation over the period of Poland's integration with the European Union. A research of the change in the structure of expenditure was also used to assess the phenomena of social inequalities.

Perception of rural space and characteristics of labour market

The rural issues are dealt with by various disciplines – geography, sociology, agricultural sciences, economy, ethnography and anthropology – which makes it rather difficult to define the term rural areas (the countryside). There are many definitions and each of them describes the term from a different perspective. Another difficulty is the fact that apart from science, different state offices and international organisations dealing with planning, development strategies, spatial policy and collection of statistical materials have their own definitions of rural areas. Statistical offices play a special role among them since they collect data according to internally defined units. The Polish statistics of the Central Statistical Office (CSO) apply the administrative criterion: rural areas cover all territories located outside of administrative boundaries of cities. They include territories bordering on large urban agglomerations which, practically, completely lost their rurality and, as regards most of the socio-economic features, rather resemble cities

(CSO, 2013c). On the other hand, international statistics define rural areas as territories with the population density below 150 person per km^2.

Rural areas are marked by a number of physical and socio-economic features including: low density of population and development, landscape predominated by open green spaces, "surface" economic activity mainly of agricultural and forestry functions, lifestyle of residents predetermined by affiliation to a small social group and identify and appearance of the population deeply rooted in distinctive peasant culture. The two last features clearly refer to the social dimension of rural areas (Kayser, 1983; Bański, 2014). Initially, the term "rural" was equated with a certain space of extensive land use and low population density. The contemporary rural studies focus on a rural resident and rurality is viewed from the perspective of a set of social, moral and cultural features. This may cover a sense of belonging to a local community, traditions and customs, attachment to land or a conviction that one lives in the countryside. The literature on the subject indicates that homogeneous rural space no longer exist, what we have is a multitude of interpenetrating social spaces. The the very concept of rural areas also shows a marked variation over time (Cloke, Milbourne, 1992).

Regular people usually have no problems with differentiating urban areas from rural areas. Rural areas are usually associated with farmlands and farms, as well as a place to stay for a summer holiday or to go to for a weekend trip. Although rural areas are more and more alike urban areas in social and infrastructural terms, farm users are still different from urban residents as regards their behaviour, sense of community spirit, greater piousness.

Rural development in Poland is largely conditioned by the pace of changes taking place in agriculture which result in a loss of rural population working permanently on a full-time basis at a farm. Hence one of the basic priorities of development is strengthening of the residual function of rural areas, i.e. supporting the transformation of rural areas into attractive place of life and work of the local communities. The research of the IAFE-NRI (Karwat-Woźniak, Chmieliński, 2013) shows that the social and living situation of a growing number of rural residents is dependent on the possibilities of earning. Rural labour market is not able to ensure employment to all rural residents. Thus in this group it is common that people working in non-agricultural professions commute.

According to the data from the IAFE-NRI, the predominance of urban enterprises is increasingly clearly outlined in the employment structure of rural population. At the same time, urban areas are a more important, from the perspective of demand for labour, place of employment of persons from non-farming families, than those linked to farming. However, recently there has been a marked increase in earning of people from farming families, since diversification of sources of livelihood gives an opportunity to increase the use of labour resources and improve the economic and living situation of the rural population, especially for families using farms of small area and characterised by small scale of commodity production and producing mainly for subsistence needs. Growing professionalization, usually in case of farms of larger area whose income is

at least at parity level, is linked to an increasing share of labour-saving methods of production and a greater number of technical devices to support labour. This results in a greater number of redundant people at a farm. Because the number of unused labour resources in farming families grows, more and more people decide to seek employment opportunities outside of agriculture. At the same time, taking up a job is not usually linked to a change of the place of residence, thus this decision largely depends on the situation on the local labour market and the possibility to commute.

Improvement of the intersectoral mobility of rural labour resources and thereby the improvement of the socio-economic structure of the rural population, should cover aiming at rationalisation of the structure of its members and beneficiaries, also support for professional re-qualification of the population linked to using a farm (Sikorska et al., 2009).

Because the proposed shape of the Rural Development Programme 2014-2020 (2014) assumes support for socio-economic rural development, with special emphasis to pro-effective changes in agriculture, the development of basic social and technical infrastructure on rural areas depends largely on the extent to which these problems are included in the cohesion policy instruments. Still, the significant gap between the development of rural and urban areas is reflected in the quality of life on these areas, and affects the development of local labour markets, as well as the possibility of increasing the circular mobility of the rural residents. Research of the IAFE-NRI points to a trend, among the rural population taking up job outside of their place of residence, to seek work in cities located at a distance of not more than 20 km. The exception are rural areas situated in the range of impact of large cities (especially voivodeship cities), where people are willing to commute even at a distance of up to 100 km.

Circular economic migrations are an important phenomenon that will have a direct impact on the level of economic infrastructure development of rural areas. In 2010, the average number of working rural residents amounted, according to LFS, to 6,082 thousand, out of which 3,453 thousand persons, i.e. 56.8% commuted (CSO, 2011a). Due to support in the form of aid funds the scale of investment in road infrastructure increased, which contributed to the improvement of roads in the recent years and shortening of the travel time. This is reflected in the increase in the number of commuters in the total number of working people. Between 2008 and 2010 the number of rural residents commuting increased by 131 thousand. Among all people earning in Poland, who worked outside of their place of residence, in 2010 rural residents constituted 33.5% and this was by 2 p.p. more than in 2008.

Spatial range of a labour market for rural residents is defined by the distance covered by rural residents on their way to job. Both surveys and mass statistics confirm that a definite majority of rural residents working outside of their place of residence commuted on a distance below 20 km. This suggests that the average labour market for rural residents comprises enterprises situated on the area of a gmina, relatively voivodeship, on the area of which is the person's village. The only exception are villages situated

near administrative boundaries, for which the local labour market goes beyond the established territorial boundaries. Border traffic works under the same rules and after Poland's accession to the Schengen Agreement opportunities for free movement and employment on the territory of most European Union countries have been created. The research of IAFE-NRI shows that circular mobility of residents of villages situated near boundaries with the EU countries, mainly Germany, is common (Chmieliński, 2013). Residents of such villages may be active on the foreign labour markets not changing their place of residence.

Information about the spatial range of local labour markets, calculated as the average distance to the workplace are confirmed by the LFS data from 2010, according to which of those working outside of their place of residence 96.5% worked at enterprises located on the area of the voivodeship of their residence. In the geographic structure of the labour market, companies from the area of a gmina of commuters' residence are essential as it comes to demand for labour, as they were inhabited by 56.1% of all people working outside the village of their residence.

The time of commuting is an important criterion of activity on the local labour market. As it has already been mentioned, because of positive changes in infrastructure it is possible to seek a job in companies more and more distant from the place of residence. There occurs a common change in the perception of physical distance which is assessed not only by the criterion of distance travelled, but also the time of travelling. Among commuters 70% covered no more than 20 km and needed nearly the same number of minutes to cover the distance, i.e. it took them less than 30 minutes. According to the research of IAFE- NRI, conducted in 2011, most of the people working outside of their place of residence lived at a distance from their workplace that could be covered, on average, in 18 minutes.

"Localness" of rural labour markets may be understood literally since their territorial range largely covers the territory of a gmina and neighbouring gminas and for the majority of people working outside of their place of residence it closes within the boundaries of a voivodeship. The key factor in selecting a place of earning is the travelling time. When there is still an insufficient number of jobs in the place of residence the size of the local labour market will be determined by the condition of road infrastructure, and quality of services of public transport companies. The time of commuting and to public utility facilities gains in importance as a factor in rural development offsetting the shortages in infrastructure development within rural areas.

Diversity of conditions and standard of life in rural and urban areas

Despite many years of cohesion activities introduced and implemented by subsequent governments, there is still a wide gap between the life standard in Poland's rural and urban areas, and the former continue to be a rather incoherent economic, social and cultural conglomerate. This is primarily the result of still vivid imprint of historical events, but also uneven distribution of accents in individual rural and agricultural

development strategies implemented over the last several dozen years. Yet, it needs to be very strongly emphasised that the scale of changes taking place on rural areas, in particular in the last decade, is of unprecedented intensity (Hałasiewicz).

In Poland, there is a quite common belief that the greatest socio-economic transformations on the rural areas took place after Poland's integration with the European Union. In this light a question comes to mind: to what extent are these changes even? or maybe they rather result in further economic and social polarisation of the Polish countryside? What draws attention in the first place is the fact that the Polish rural areas for years undergoe deagrarization, understood as a decline in the importance of agriculture for the rural economy and local communities and rural culture. Thus it is impossible to understand the transformations occurring on Poland's rural areas without considering the scale and significance of the phenomenon. As a result, it is especially important to consider the high level of heterogenization of employment structure in rural economy, as well as in the rural social structure.

The change in the structure of income is one of the manifestations of the changes in the employment structure (Table 1).

Table 1. Sources of income in urban and rural households (%)

Specification	Rural areas		Urban areas	
	2006	2012	2006	2012
Total disposable income	100.0	100.0	100.0	100.0
income from paid employment	39.4	47.2	51.1	56.6
income from self-employment	6.1	7.6	9.5	8.9
income from individual farms in agriculture	14.1	12.6	0.5	0.3
income from social benefits and insurance	29.7	24.8	27.7	26.0
income from other social benefits	6.2	4.1	4.8	2.9

Source: CSO, 2007; CSO, 2013.

Increase in the share of income from non-agricultural work and simultaneous drop in the share of income from agriculture, is especially visible in the change of structure of rural community's income, as it additionally points to the process of deagrarization of rural areas. However, disturbing is the increase in the share of income from social assistance benefits, which may be interpreted as a sign of spreading poverty and social polarisation on rural areas.

The income of households is also one of the key criteria of assessment of socio-economic processes taking place on rural areas. Not only the level, but also the relations between different social groups are important. In the period of accession the income gap between urban and rural population has narrowed. In the first years after the accession (in 2006), the average monthly disposable income per capita in an average urban household was higher than the income on rural areas by 43.2% (PLN 943.90 on urban areas against PLN 659.29 on rural areas). After a few years the advantage decreased in 2012 to 40.1% (PLN 1,439.54 on urban areas against PLN 1,027.63 on rural areas). Although the general income gap is still significant, a high drop in the difference between income

from self-employment should be emphasised (in parallel from 123.5%to 62.8%). A decrease in the difference was also noted in the income from paid employment (from 85.8% to 67.8%). These changes allow to conclude that the diversification of sources of livelihood of rural residents has increased which is, undoubtedly, reflected in the change in the social structure on rural areas. Increasingly more non-farmers settle on rural areas.

At the same time, an increase in the advantage of income from an individual farm in an average rural household per capita against an average urban household was noted. In 2006-2012, this advantage increased from 20 times to 34 times. It may be concluded, that a group of larger, better developed and more profitable farms clearly separates on rural areas. And urban population increasingly less supplements their budgets with income from allotment gardens, probably, more often using them for recreational purposes.

The lower level of income of rural population is accompanied by a wider range and greater risk of poverty as compared to urban population. Moreover, the lower level of income of rural population combined with greater difficulties on the rural labour market compared to the urban one, and infrastructural barriers on rural areas constitute a real threat of increase in the level of poverty and deepening development gap along the rural-urban line (CSO, 2011b; Kaleta 1999). In 2012, the poverty risk indicator was at the level of 12.3% on urban areas, while on rural areas it was by nearly twofold higher and amounted to 24.3%. Similarly, the indicator of poverty or social exclusion risk was significantly lower on urban areas than on rural areas (22.7% against 32.8%). Also as regards other basic indicators, set by the "Europe 2020" strategy, urban population was characterised by better socio-economic situation than rural population, but the gaps were in their case slightly more narrow. The indicator of severe material deprivation amounted on urban areas to 13.0%, while on rural areas to 14.2%, and the indicator of low labour intensity was alike: 7.3% against 6.2% (CSO, 2013a).

Significant differences between urban and rural areas were also noted in the subjective assessment of the material situation. In 2012, 2.5% of urban households assessed their material situation as "very good", while in case of rural areas it was only 1.0%. Similarly higher share of urban households assessed their material situation as "rather good" (22.1%) than of rural households (16.9%). On rural areas there was, however, more households than on urban areas that considered their material situation as "average" (59.9% against 55.1%) and "rather bad" (16.1% against 13.6%) (CSO, 2013b).

Change in the level and structure of expenditure

Literature on the subject usually names income as the basic determinant of differentiation, mainly, economic, but following from it also social. Apart from it, conditions and standards of life are increasingly often assessed on the basis of the level and structure of expenditure on consumption and not income. It is hence assumed that expenditure are more reliable than income declared by the family, for instance, because they are characterised by probably lower degree of underestimation. The level and structure

of expenditure may be taken, although with some simplification, as an illustration of the gap in the life standard between urban and rural families, and a pattern of their consumption, thereby social gap between urban and rural areas. However, it should be kept in mind that neither the life standard nor the consumption patter follow entirely from economic situation of a family (although they are primarily a derivative of the volume of income), they are also shaped by subjectivism and cultural and climatic conditions which differentiate between the costs of some needs.

The level of income is the basic determinant of the level and structure of expenditure and thus the possibility to satisfy the needs of households. Low income allows to satisfy the primary needs essential to life, i.e. to follow the consumption pattern indicating the satisfaction of primary needs. Along with an increase in income of a household the scope of satisfied needs extends with the needs of a higher level, which means following a consumption pattern indicating the satisfaction of secondary needs or needs described as luxurious. Primary needs include, above all, food, as well as clothing, housing and health care. Whereas, needs in the field of education, culture, entertainment are secondary needs satisfied only after the basic needs are met to, at least, adequate degree. Hence there is a regularity, which shows that as the income increases, the share of expenditure on food decreases, the share of expenditure on rent, fuel and clothing is relatively constant, while the share of secondary expenditure grows[3]. High share of expenditure on food in total expenditure points to following a consumption pattern based on satisfaction of primary needs. Whereas, a decreasing share of expenditure on food in the total expenditure along with simultaneous increase in the share of expenditure on non-food goods informs on following the consumption pattern of increasingly higher level than the primary (secondary or luxurious), which indicates a gradual improvement in the living conditions of a family (Kołodziejek, Zielińska, 1989). Table 2 illustrates the changes in the level and structure of expenditure.

In the period of Poland's accession to the European Union there occurred multidirectional, oscillating, positive and negative changes both on rural and urban areas in the level and structure of funds allocated to satisfaction of needs. Nonetheless comparison of the manner of allocation of funds intended for consumption by the average urban and rural household enables to identify certain social trends.

3 Engel's law defines the interdependencies between income and structure of expenditure of the population.

Table 2. Changes in the level and structure of expenditure in urban and rural households in the period of Poland's accession to the European Union

Specification	Relation of urban/rural expenditure level %		Change in expenditure structure in 2006-2012 percentage points	
	2006	2012	rural areas	urban areas
Total expenditure	138.6	136.5	x	x
food and non-alcoholic beverages	108.0	110.9	-3.2	-1.6
alcoholic beverages and tobacco products	137.4	144.7	-0.1	0.1
clothing and footwear	145.1	142.2	-0.4	-0.5
housing and energy carriers	150.5	144.9	0.9	0.5
flat equipment and running a household	137.5	139.4	-0.4	-0.3
health	148.4	151.6	0.0	0.2
transport	118.5	118.7	1.0	1.0
communication	158.7	135.4	-0.7	-1.4
leisure and culture	218.6	185.3	1.4	0.8
education	236.5	220.8	0.1	-0.3
restaurants and hotels	260.3	247.4	0.6	1.0
other goods and services	163.3	156.4	0.2	0.0
pocket money	119.6	76.9	1.1	0.2
other expenditure	152.0	165.6	0.3	0.1

Source: CSO, 2007; CSO, 2013.

First of all, what decreased was the advantage of the average monthly values per capita of expenditure of urban households compared with the expenditure of rural households from 38.6% in 2006 (PLN 833.96 on urban areas to PLN 601.64 on rural areas) to 36.5% in 2012 (PLN 1,173.81 on urban areas to PLN 859.23 rural areas). The gap in the total expenditure of households between urban areas and rural areas was smaller than in the case of income. It may be suggested that rural families tried to "catch up" with the life standard of urban families and spent money instead of saving it. Attention is, however, drawn to a very significant differentiation as regards individual targets. The greatest differences were noted in case of secondary expenditure. These included expenditure on: "leisure and culture", "education" and "restaurants and hotels". This points to significant social inequalities between urban and rural residents to the disadvantage of the latter. In the period of the accession the gap, indeed, narrowed but the differences are still high. Narrowing the gap between these categories of expenditure may result both from a positive change in the mentality of rural families towards a wider use of goods that were previously used mainly by the urban population, as well as from an increase in migration from cities to rural areas. Also changes in the case of expenditure for pocket money may be considered as greater "openness" to independence of members of rural families.

The increase in the advantage of expenditure on alcoholic beverages and tobacco products of urban families as compared to rural ones is also interesting. This may be interpreted not only as a success of comprehensive health promotion campaigns and common sense

behaviour, but above all as the acceptance of a new lifestyle of rural families, especially agricultural ones, because they always demonstrated the highest share of expenditure on alcohol as compared to other social and professional groups of households.

Another positive trend is narrowing of the gap between urban and rural areas as regards expenditure on education which gives the grounds for social and professional success. Doubts, however, arise due the fact that rural areas probably own this positive accent to rural non-agricultural community, since in the period of accession the share of expenditure on this target decreased in the households of farmers (Chmielewska 2013). This group of expenditure, significant for mental and physical development of the young generation and its position on the labour market, always constituted a small share in the households of farmers. In the future, expenditure on education may decide on the social situation of families of farmers and conditions of career start of their children. Unfortunately, research results provided by other research centres give the lack of money as the main reason for limiting expenditure on education, because the awareness and aspirations of farmers regarding education of their children have improved significantly after Poland's accession to the European Union. As far as in 2003, as much as 26.0% of farmers considered that primary education of their child is sufficient, already in 2009 merely 9.6% wanted their children to graduate only from a vocational school; while 33.9% – wanted their children to graduate from a technical college or vocational high school, and the most of them, i.e. 68.3% – wanted their children to get a university degree (Master's degree) (Social Diagnosis 2003, Social Diagnosis 2009).

Given the overall improvement of the well-being of rural families in the period of Poland's membership in the European Union (e.g. due to direct payments) it may be assumed that there are three types of possibilities of limiting expenditure on education, namely: (1) raising the level of education gives way to other needs in the ranking of resources allocated to non-food purposes; (2) the costs of education (tuition, fees for lodgings or costs and hardships of transport and purchase of school aids) are so high that they become the cause of resignation from skills improvement; (3) the adverse demographic changes, such as, above all, decrease in the share of people in the pre-working age in the structure of rural family, including as a result of economic migration of young people after Poland's accession to the European Union.

Analysis of changes in the relation of expenditure between urban and rural areas requires to ask a question: do the changes in mutual disproportions of expenditure on individual needs correspond to the improvement of satisfaction thereof? Doubts may arise primarily as regards the increase in the advantage of expenditure on urban areas on such target as health. High expenditure on health probably does not follow from greater attention to preventive healthcare, but results from a growth in the prices of medicines and medical services, including development of private medical clinics[4]. Deterioration in the relation of expenditure of rural residents as compared to urban

4 In 2000-2010, the prices of pharmaceuticals increased by 36.3%; while that of outpatient services by 37.6%. According to: CSO, 2011, p. 440.

residents on healthcare may point to a failure to met many needs in this regard by the rural population. Additionally, farmers are characterised by "competition" between consumption targets of households and production targets of farms, which may contribute to limiting expenditure on household needs.

Analysis of the changes in the level and structure of expenditure of urban and rural households allows to conclude that in the period of Poland's integration with the European Union the economic and social gap between urban and rural residents has narrowed. The conditions and standards of life of rural population have improved as indicated by the positive changes in the structure of their expenditure, especially the drop in the share of total expenditure on food and simultaneous increase in the share of expenditure on secondary aims.

Conclusions

The research conducted on the basis of assuming as the indicators of social changes on rural areas the changes in the level and structure of expenditure in the context of urban/rural relations, although does not allow to capture the full range of changes taking place on the contemporary rural areas it at least allows to point some trends in therein. First of all, it is possible to note an improvement in the socio-economic situation on rural areas and the narrowing of the gap between the standards of life of rural and urban residents. These changes result from both an improvement of income situation of rural population (including farmers), as well as migration processes and suburbanisation, deagrarization of rural communities and rural economy as well as increase in the significance of natural resources conservation. This is manifested, for example, in convergence of consumption patterns of rural and urban communities, but the differences are still quite clear.

A challenge for rural development policy (rural areas) is further narrowing of the gap between rural and urban areas, mainly as regards quality of life. These activities should not, however, result in loss of the value added following from the cultural and social differentiation of rural areas constituting *per se* one of the more important development niches.

A change in the structure of income points to the fact that over the last years there emerges a process of growing level of off-farm employment of rural residents. At present, the agricultural function is not able to ensure decent income to rural residents. It is expected that in the future the demand for work in the sector will further decrease. This, at the same time, means that it is necessary to develop non-agricultural functions on rural areas, such as e.g. tourism, services, trade, small-scale production, housing. It will allow to narrow the socio-economic gap between rural and urban areas. At the same time, it will be linked to the progress of the rural deagrarization process. The perspective of departing from the rural character of rural areas and shift the emphasis towards non-agricultural functions may affect designing of rural policy in Poland, in which the issues of non-farming population may become more important than the problems of farmers.

The direction of socio-economic changes that took place on the rural areas in the period after the accession indicates that the correct development of social and economic life on rural areas will require to create better access to labour markets for rural residents. To this end, regular and coordinated activities will be needed to raise the qualifications of rural residents, especially of the young generation. This will enable to take up job offers of the contemporary labour market. It is also advisable to develop communication systems, including electronic communication thereby facilitating paid employment or self-employment to rural residents without the need to leave their place of residence.

Diversification of rural economy is rightly considered as the solution to problems with rural development. The present trends of rapid development in some agglomerations and their closest surroundings to some extent hinders entrepreneurship development on areas of inferior location. This situation should be connected to the fact that rural areas are devoid of service background and characterised by insufficiently qualified labour force and lack of industrial heritage. For that reason some part of rural areas will be doomed to relatively slow development.

Speeding up multidirectional development of rural areas is linked to the emergence of many factors, especially: individual entrepreneurship of residents, activity of local authorities, good advisory for business entities, relevant schooling of residents and comprehensive development of infrastructure.

Under the conditions of growing importance of non-agricultural professional activity of rural residents, the future of rural development in Poland will be closely linked to strengthening the residential functions of the village, whose importance will grow along with the development of communication infrastructure and utilities, determining the quality of life on the rural areas. Research shows that the sizes of the labour market will be limited not by distance, but by the time of commuting. The development of infrastructure not only hinders the process of migration of rural residents to urban areas but also strengthens reverse trends – inflow of urban residents to rural areas (but still primarily to places situated near an agglomeration or by the main communication routes) and increase in the level of spatial circular mobility. The phenomenon of circular migration of rural residents will still progress along with an increase in the level of educational attainment, while the decisions on permanent migration will depend on the difference in the quality of life between the rural areas and urban agglomerations. This points to convergence of the lifestyle of the residents of these areas. Along with access to mass information, unification of life and consumption patterns the aspirations of these groups become similar. Consequently, the scope of needs considered as basic changes. Their scope not only covers satisfaction of living needs (i.e. basic trade and service infrastructure), but also access to cultural and entertainment offer, healthcare and specialist services. Shortcomings in the development of rural infrastructure may be offset by development of road infrastructure and public transport systems only to some degree. Infrastructural investment would allow for extension of the range of impact of economic development centres (located in urban agglomerations) and to mitigate the effects of structural unemployment on rural areas.

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DEVELOPMENT PERFORMANCES OF AGRICULTURE IN THE DANUBE REGION COUNTRIES[1]

Milivoj Gajić[2], Bojan Matkovski[3], Stanislav Zekić[4], Danilo Đokić[5]

Summary

In the recent decades, the Danube Region countries profile their policies towards a more efficient way of exploiting the natural resources of the Danube basin. The Danube can contribute to a better integration of the countries, enhancing economic opportunities through diversification and promotion of rural development. The trend analysis in the agricultural sector of the Danube Region countries refers to the first decade of this century, and it begins with the determination of the agricultural importance in the overall economy. The development performances of agriculture in the Danube Region countries are considered according to the production and export performances of this economic sector, using a comparative approach. The agricultural production growth, level and growth of the partial agricultural productivities - labour and land, as well as the value of exports in relation to engaged labour and agricultural land, are analysed in such a context.

Key words: *Agriculture, the Danube Region, agricultural productivity, export performances*

JEL: *Q10*

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Introduction

With more than 200 million inhabitants and about one fifth the European Union (EU) surface area, the Danube Region, being functionally linked to its catchment area, is of great importance to entire Europe. The Region comprises of ten countries through which the river Danube flows or makes their borders, and they are: Germany, Austria, Slovakia, Hungary, Moldova, Croatia, Serbia, Bulgaria, Romania and Ukraine. In addition to these states, in broader terms, the Danube Region includes the Czech Republic, Slovenia, Bosnia and Herzegovina, and Montenegro. The River Danube links 14 extremely economically, environmentally and culturally different countries. A healthy environment and climate change challenges have been a contemporary basis for economic, social and cultural progress in the Region. Agriculture is of great strategic importance for most countries of the Danube Region, while resource potentials available to individual countries are very heterogeneous.

The Danube is the most important European river that forms part of the trans-European navigation system Rheine – Main – Danube (Tešanović et al., 2013). Also, the Danube links Western, Central and Eastern Europe. These regions had very different stages of economic development after World War II. The most of Central and Eastern European countries were centrally-planned socialist economies. The political changes that have occurred in these countries in the late 20th century caused changes in the whole economic system, as well as in the agricultural sector (Zekić et al., 2009). Such historical circumstances had a major impact on the production performances of agriculture in these countries.

Throughout its length the Danube River provides a valuable resource for many competing uses. Downstream from Slovakia, the river is the major source of drinking water in all the countries (except Bulgaria) and it is an important source in Austria and Slovakia. The river is also used extensively for irrigation, especially in the Hungarian plain. Fisheries are important source of food and income at its lower reaches, and the Danube Delta at the Black Sea is a large tourist area (Linnerooth-Bayer, Murcott, 1997).

Agriculture is the foundation that could be significantly technologically and organizationally modernized. Since the Danube region represents a potential basic and potential for the creation of a single market it is necessary to consider the level of competitiveness of the agricultural sector and take advantage of the development potential of the region. Achieving macro-regional competitiveness and regional coherence is important in strengthening international coperation (Ignjatijević et al., 2014).

Materials and methods

The empirical research was based on the data of the Food and Agriculture Organization (FAO), especially the data related to the resources, production and foreign trade of agricultural products in the period 2001-2011. The data of the number of active farmers in Slovenia and Bosnia and Herzegovina were taken from the national statistical databases, while the data of share of agriculture in gross domestic product (GDP)

were taken from World Bank database. Standard mathematical and statistical methods were used for the analysis of the main trends and characteristics of the agricultural development performances in the Danube Region countries. The general method was the comparative analysis, used also to identify differentiations in agricultural performances of the Danube Region countries.

The growth rates were calculated from the exponential function, so they represent the average annual dynamics of the phenomena in the related period. From the exponential function in the form $y=ab^x$, the growth rate was calculated according to the formula: $r=(b-1)*100$, where x and y represent the dependent and independent variables, respectively, while a and b are the parameters of the function. The partial agricultural productivities - labour productivity and land productivity were obtained as the ratio of final agricultural production per active farmer or per hectare of agricultural land, respectively. Partial labour and land productivities are connected via the factor land/labour ratio, which can be expressed through the relation: $(P/L)=(A/L)*(P/A)$, where P, L and A are the production, labour and land, respectively (Zekić et al., 2010a).

Cluster analysis is the modern statistical method of partitioning an observed sample population into relatively homogeneous classes, to produce an operational classification. The objective is to sort observations into groups called clusters so that the degree of statistical association is high among members of the same group and low between members of different groups (Berlage, Terweduwe, 1988). The grouping in cluster analysis was based on the results (scores) calculated according to the characteristic values of all the variables, separately for each observed unit. A hierarchical method was used in this study, while the indicators of the agricultural importance in the economic development were used as variables.

Economic relevance of agriculture

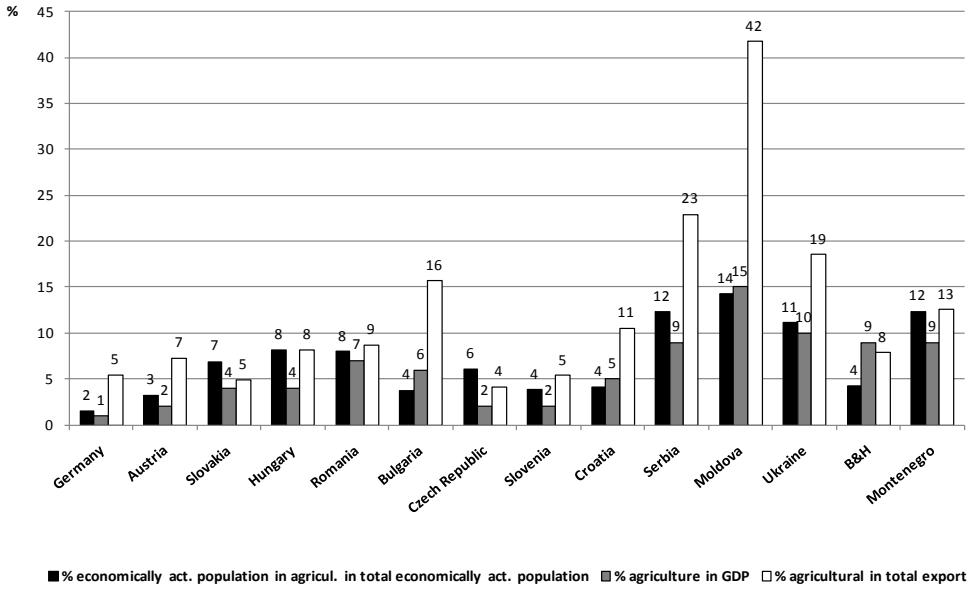
Agriculture is the raw material base for food industry and a number of other industries. In the initial stage of economic development, most of the working population is active in agriculture, and a large part of national income also is from agriculture (Marković, Marković, 2014).

To determine the importance of agriculture in the overall economy, the following indicators were used: the share of economically active population in agriculture in the total economically active population, the share of agriculture in GDP and the share of agriculture in foreign trade. As a rule, relevance of agriculture is lower in the countries with higher level of economic development. With the overall economic development, and thus the development of agriculture, the engaged agricultural labour is significantly reduced, while the use of machinery and chemical substances in agricultural production is increased. Although the development of the traditional society mainly was initiated by the development of agricultural technology, in modern times, its share in the economic organization of society has been declining (Čučković, 2004). Beside the agricultural development, there were other factors that

had influence on development of society, such as environmental factors, religious factors, social norms, market characteristics, etc.

The development regularity of the economically active population in agriculture decline in the total economically active population is confirmed by the data for the Danube Region countries (*Figure 1*). According to FAOstat estimation, the Danube Region has a population of 215 million people with approximately 5.8% engaged in agriculture as the basic activity. The largest relevance of agriculture in the overall employment is in Moldova, with 14.2% of the population engaged in this activity, followed by Montenegro and Serbia, with approximately 12% of economically active population in agriculture. The smallest share of economically active population in agriculture is, as expected, in the most developed countries of the Region - Germany and Austria, with only 1.5% and 3.2% of the economically active population engaged in agriculture, respectively. In comparison with the EU countries of the Region, the non-EU countries of the Region have a much larger share of economically active population in agriculture in the total economically active population.

Figure 1. Economic relevance of agriculture in Danube region countries in 2011



Source: The authors' calculations on the basis of FAOstat and World Bank.

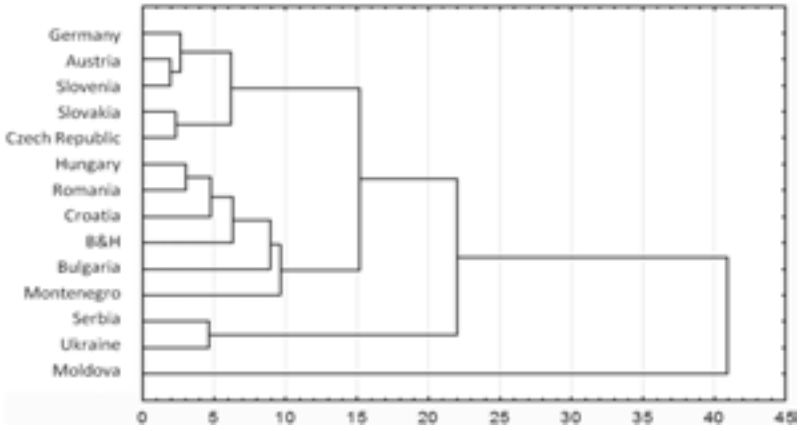
In the countries of Southeastern Europe and Ukraine, agriculture has greater relevance than in other Danube Region countries, which can be seen in its contribution to the overall economic activity, i.e. its participation in GDP. This percentage ranges from 1% in Germany to 15% in Moldova. The lower agricultural share in the GDP is in the EU countries of the Region, while in Serbia, Bosnia and Herzegovina and Montenegro it

is approximately 9% (*Figure 1*). In the recent decades, a tendency of declining share of agriculture in GDP is obvious in all the countries of the Danube Region (FAOstat).

Among the analysed countries, Moldova has the highest share of agricultural products in its total exports - 42% of its total exports in 2011, followed by Serbia with 23% and Ukraine with 19%. In the export structure, agriculture has an important role in Montenegro, Croatia, and Bosnia and Herzegovina, with the shares of 13%, 11% and 8%, respectively. The export structure of agricultural products in these countries is not particularly favorable, since it mainly relies on the export of raw materials, while finished products with the higher added value are exported to a much lesser extent. In Serbia, for example, the export is dominated by cereals, primarily corn, fruit and vegetables (raspberries, apples), sugar, flour and flour products, etc. (Zekić et al., 2010b). In other countries of the Danube Region, the dependence of the total exports on agriculture is significantly lower, and the lowest percentage of agricultural exports is in the Czech Republic - 4% of total exports. The slightly higher share of agricultural exports in the total than the EU-member Danube Region average is in Bulgaria - 16%, while in the other EU-member countries of the Region, this share is less than 12% *(Figure 1)*.

The cluster analysis refers to the factors that determine the importance of agriculture in the overall economy - the share of agriculture in employment, the creation of GDP and exports. The results show that the analysed countries can be classified into four clusters. The first one includes Germany, Austria, Slovenia, Slovakia and the Czech Republic, i.e. the most developed countries in the Danube Region, with the small share of agriculture in the total economic activity. Those countries represent the development drivers of the entire Region. The second cluster includes Hungary, Romania, Croatia, Bosnia and Herzegovina, Bulgaria and Montenegro – the less developed countries, where agriculture does not constitute a key economic activity. The third cluster includes Serbia and Ukraine, which are also the less developed countries, but with relatively greater importance of agriculture in the overall economy. The fourth cluster includes only Moldova, the least developed country in the Region, with the dominant role of agriculture in the overall economy (*Figure 2*).

Figure 2. Cluster analysis - relevance of the agriculture in economy



Source: The authors' calculations on the basis of FAOstat.

The first two clusters comprise the member countries or potential member countries of the European Union in which the agricultural policy framework include agriculture and rural development. Zekić and Matkovski (2014) indicated that decades ago, the main mission of the EU agriculture, defined by the Common Agricultural Policy (CAP), was the production of raw materials and increased share in the world market. Unlimited price support made the EU one of the largest food exporters in the world. These measures caused many negative effects, which, together with the new international challenges and the EU enlargement to the "East", enforced changes of the CAP model and redefined role of agriculture in European society.

In future, the support for agriculture in the EU will be based on decoupled direct payments, which will have the role of "greening" the European agriculture, while rural development policy will maintain its prominence (Birovljev et al., 2014). Mizik and Meyers (2013) indicated that the major and common objective of the Western Balkan countries is the quickest possible accession to the European Union. That will open new markets for agricultural products and in most cases increase support for agriculture and rural development, although Western Balkan's producers will also face with higher competition. Additionally, countries preparing for the membership in the European Union must follow European model of rural development which promote multifunctional agriculture and the integral rural development concept with more respect to environmental protection (Lovre et al., 2010).

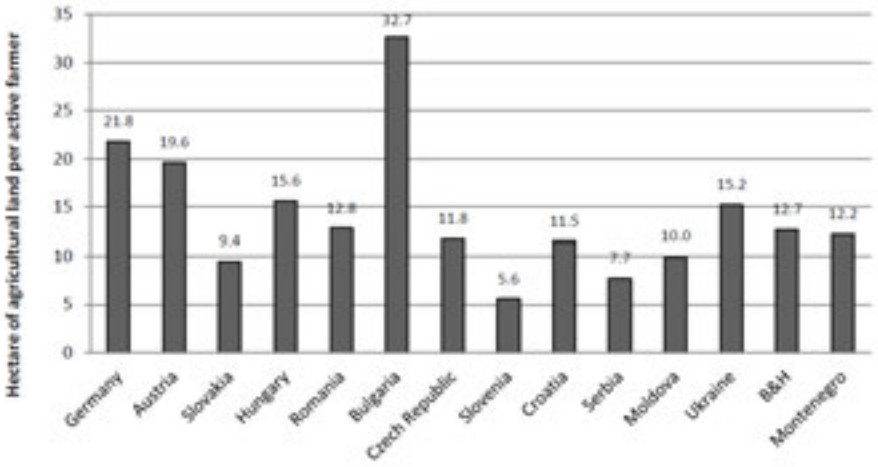
Structure of resources in agriculture

With the development gap reduction in the most developed countries in the world, it is more evident that the differences in agricultural productivity are primarily determined by agro-ecological conditions in agricultural production. In this context, before the analysis of the partial productivities of agriculture, it is substantial to analyse the

agricultural resource structure, represented by the relationship land/labour.[6] In the development of agriculture, land/labour ratio is the dominant factor for selection of production technology (chemical-biological and/or mechanical), i.e. it has a crucial influence on preferences towards labour-saving or land-saving technologies.

The analysis of the agricultural resource structure in the Danube Region countries shows that Slovenia and Serbia have the worst resource structures. Slovakia and Moldova have a low land/labour ratio, as well. The highest level of the agricultural resource structure in the Region is in Bulgaria and Germany (*Figure 3*).

Figure 3. Structure of resources in agriculture



Source: The authors' calculations on the basis of FAOstat.

Note: Average for period 2001-2011.

In the analysed period, the largest increase of the land/labour ratio was recorded in the newer EU members, so the average annual growth rate of the resource structure was 8.7% in Croatia, 6.1% in Bulgaria and 5.9% in Romania. This may indicate positive reduction trends of "too much employment" in agriculture as a result of the structural changes in agricultural sector during the pre-accession period. In case of Bulgaria and Romania that process has continued during the period after joining EU. The main characteristic of that period is rapid development of non-agricultural sector, as well as modernization of agricultural production. The decrease of the engaged labour in agriculture was also present in Serbia. These trends led to the positive impact on the resource structure of Serbian agriculture; however it was still less favorable in comparison to the EU member states. In the observed period, the land/labour ratio in Serbia was increased from 5.9 to 8.6 hectares per active farmer, while in the same period this ratio was increased from 24.1 to 44.2 hectares per active farmer in Bulgaria.[7]

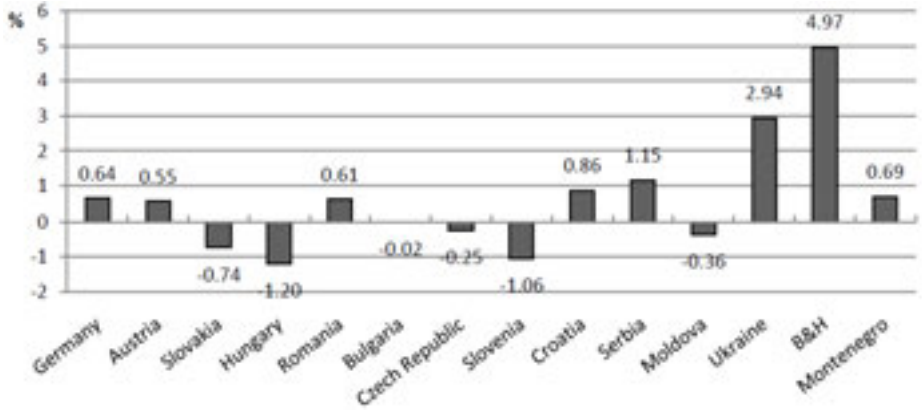
6 This relationship is expressed in hectares of agricultural land per active farmer.

7 The authors' calculations on the basis of FAOstat.

Performances of agricultural production

For the total observed period, the dynamics of agricultural production in the Danube Region countries shows different trends for individual countries, which suggests heterogeneity of agriculture and the conditions of agricultural production (*Figure 4*). Such tendencies indisputably coincide with the economic and financial crisis which has been present for the last few years, but also with the agricultural adaptation to the implemented transformation processes of the agricultural sector in certain countries.

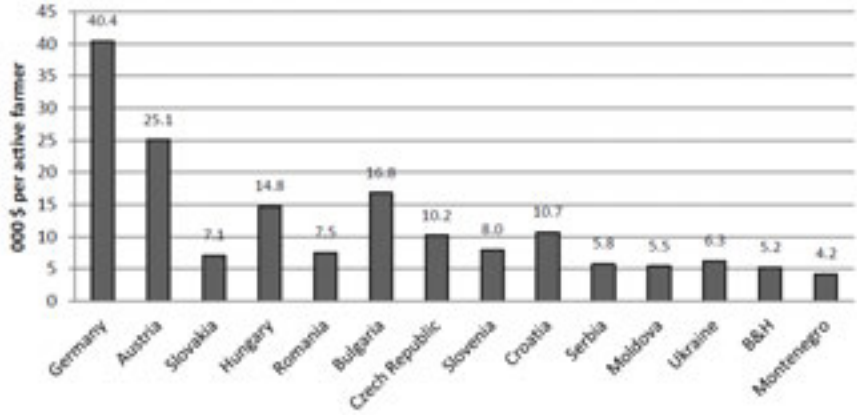
Figure 4. The average annual growth rate of agricultural production for period 2001-2011.



Source: The authors' calculations on the basis of FAOstat.

The agricultural productivity in the Danube Region was analysed according to the partial productivities of agriculture - labour productivity and land productivity. From the standpoint of agricultural labour productivity there was a significant lag of the non-EU Danube Region countries. The high level of this productivity was achieved in Germany and Austria: in the observed period, the agricultural production per active farmer in Germany was almost 8 times higher than the same in Serbia (*Figure 5*). However, in the same period, the agricultural labour productivity in Serbia was increased, primarily as the consequence of the reduced number of active farmers.

Figure 5. Labour productivity in agriculture

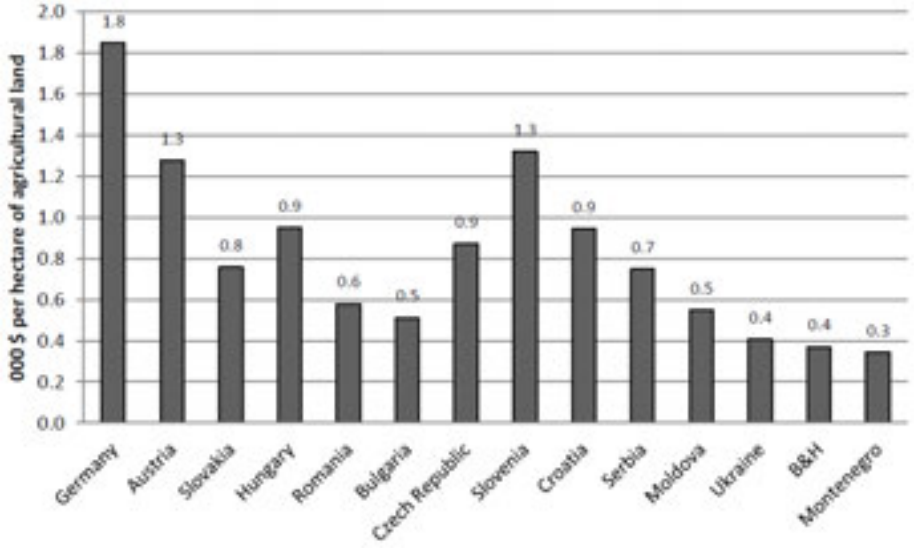


Source: The authors' calculations on the basis of FAOstat.

Note: Average for the period 2001-2011.

Similar to the labour productivity, the land productivity was higher in the EU member countries than in non-EU member countries. According to this indicator, Serbia led in relation to the non-EU countries of the Region, due to the availability and quality of the land resources in Serbia. Additionally, Serbia had higher average land productivity than the new EU members, Bulgaria and Romania. When the land productivity was concerned, the non-EU countries of the Region lagged less. The highest level of this productivity was achieved in Germany, followed by Slovenia and Austria. The land productivity in Germany was approximately 2.5 times higher than the same in Serbia. The lowest production per unit of agricultural land was in Montenegro; it was 5.4 times lower than the same in Germany, and 2.2 times if compared with Serbia (*Figure 6*).

Figure 6. Land productivity in agriculture

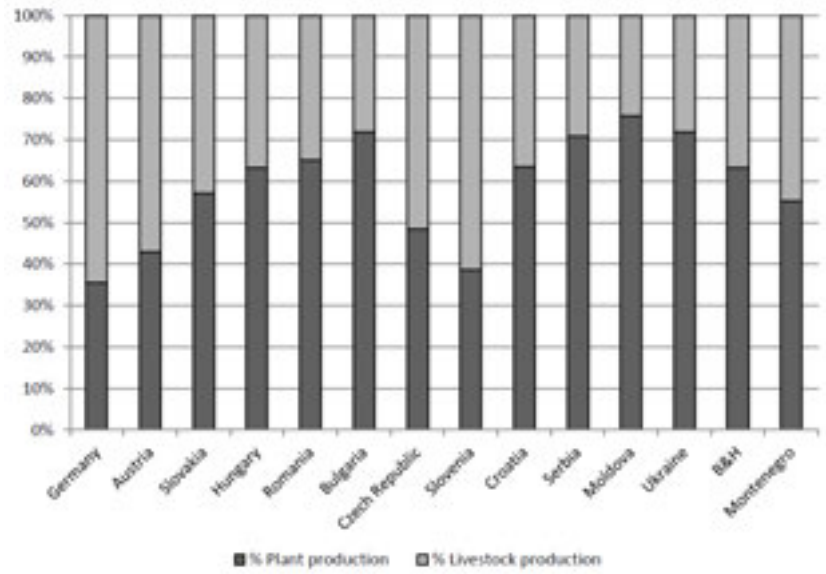


Source: The authors' calculations on the basis of FAOstat.

Note: Average for the period 2001-2011.

The less favorable parameters of agriculture in Serbia and other non-EU Danube Region countries are the result of the extensive agriculture, which can be seen in the structure of agricultural production. The agricultural structure was dominated mainly by lower-value, plant-origin products, which were insufficiently used for conversion into livestock products with higher added values. In some countries, the crop production accounts for more than 70% of the total production value of agriculture. In this regard, the development of livestock production would maximise production per capacity unit in these countries. In Serbia, the value of crop production in the total agriculture was 71%, in Bulgaria and Ukraine 72%, and in Moldova 76%. The Danube Region countries with the higher values of the livestock than the crop production were Germany, Slovenia and Austria, with the shares of the livestock production of 64%, 61% and 57%, respectively (*Figure 7*).

Figure 7. Structure of *a*gricultural production in 2011



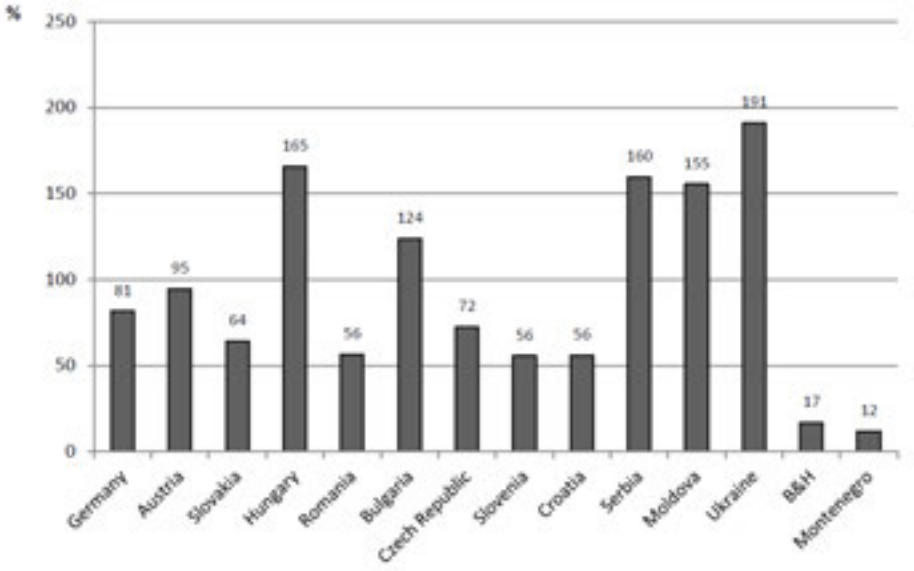
Source: The authors' calculations on the basis of FAOstat.

The lag of Serbia in the labour and land productivities, both behind the EU countries and in relation to other countries in transition was mostly conditioned by the livestock/labour and livestock/land ratios, which implied an insufficient livestock production and low utilization rate of potential livestock production in Serbia (Zekić et al., 2012). In this context, it could be seen a low milk production per active farmer, which was in Serbia 3.3 times lower than in Croatia, and 2.75 times lower than in Hungary, while the meat production per active farmer lagged slightly less. These rates were slightly lower in the milk and meat production per hectare of agricultural land, so Serbia produced more meat per engaged land unit than Croatia and only slightly less than Hungary (Zekić et al., 2010a).

Agriculture and foreign trade

The importance of the agricultural sector in the foreign trade in the Danube Region countries varies from country to country. The countries with a very high positive foreign trade balance in the agricultural sector are the following: Ukraine, Hungary, Serbia, Moldova and Bulgaria. Bosnia and Herzegovina and Montenegro are on the other side, i.e. their imports are far higher than their exports, and the import coverage by food export does not reach 20% (*Figure 8*), and therefore they represent a significant export market for other countries of the Region.

Figure 8. The *e*xport/import coverage of the agricultural products



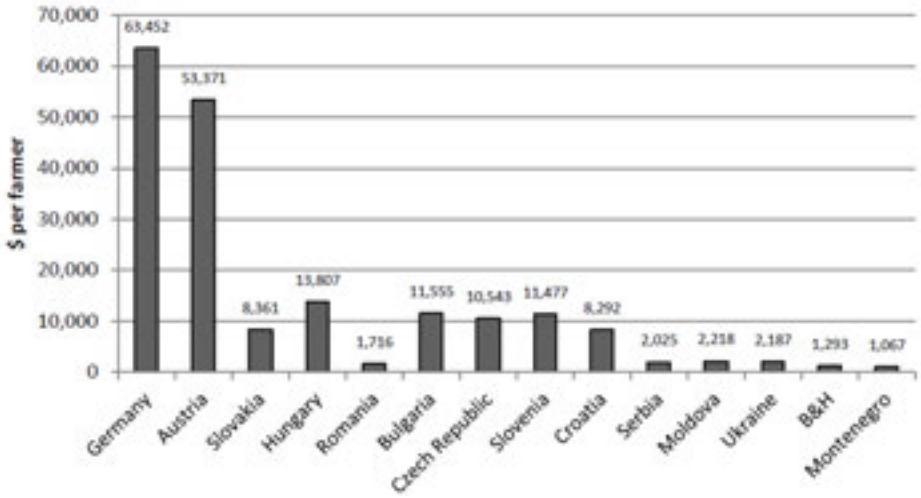
Source: The authors' calculations on the basis of FAOstat.

Note: Average for the period 2001-2011.

Ignjatijević et al. (2011) indicated the existence of positive revealed comparative advantages of agricultural and food products in few countries of Danube region. In the international trade of agricultural and food products following countries achieved a surplus and a positive comparative advantage: Hungary, Serbia, Moldova, Ukraine, Bulgaria and Romania. Using index of revealed comparative advantage more competitive agri-food products and markets, as well as potentials for further improvement of the competitiveness of the agri-food products can be identified (Birovljev et al., 2015). Over the last fifty years, the situation has changed significantly in the EU countries. Now, the EU makes the surplus in competitive agricultural products, while there is the deficit mainly in those products that require specific agro-ecological conditions that are not typical for the EU countries (Zekić et al., 2012).

In relation to the primary resources - labour and land, the agricultural export performances of the Danube Region countries show that Serbia and the other non-EU countries lag behind the EU, except Romania, which has a very poor export performance. The export per active farmer shows the best performances in Germany and Austria. The situation is similar with the export value of agro-food products per hectare of agricultural land. Although the positive foreign trade balance in the food sector has been continuously realized in Serbia, if the agricultural export is considered in relation to the engaged labour and land, a rather modest performance is achieved. That is another indicator of the extensiveness of Serbian agriculture, i.e. the underutilization of its production potential (*Figure 9* and *Figure 10*).

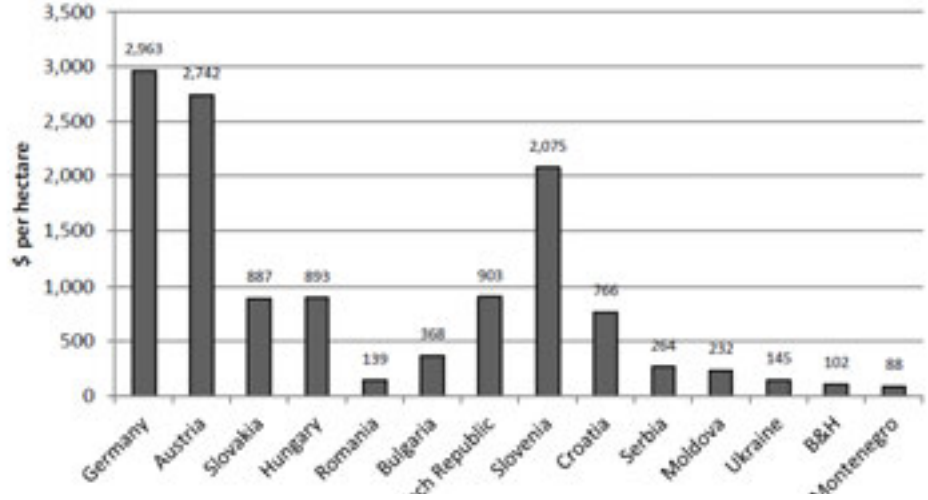
Figure 9. Export of agricultural products per active farmer



Source: The authors' calculations on the basis of FAOstat.

Note: Average for the period 2001-2011.

Figure 10. Export of agricultural products per hectare of agricultural land



Source: The authors' calculations on the basis of FAOstat.

Note: Average for the period 2001-2011.

The changes in Danube Region countries have been significantly influenced by the European integration process, since it creates a wide variety of options, such as the improvement of the socio-economic development, increase of competitiveness, adequate environmental management, efficient use of resources, as well as the ongoing modernization of the security and transport corridors (Gajić et al., 2011). The adoption of the EU Strategy for the Danube Region opens up great opportunities for the

infrastructure development, environmental protection, tourism, transport and extension of cooperation among the Danube Region countries (Stojović et al., 2012).

Conclusion

According to the importance of agriculture in the economy, there are significant differences among the countries of the Danube Region. The importance of agriculture is relatively small in the countries that joined the EU earlier, if compared with the countries that joined the EU later or are not the members of the Union, yet. The situation is similar if the agricultural production performance is observed, i.e. the higher productivities of labour and land are characteristic for the EU members. In addition, the agricultural production structure is dominated by the crop production in the non-EU countries. Based on the production of raw materials and products of lower values, this kind of agriculture results in relatively weaker export performance. The most developed countries of the Region should be the drivers of more intensive interstate cooperation within the Region in order to exploit the advantages provided by the Danube properly and to enable a balanced agricultural development in the Region.

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РАЗВОЈНЕ ПЕРФОРМАНСЕ ПОЉОПРИВРЕДЕ ЗЕМАЉА ДУНАВСКОГ РЕГИОНА

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Резиме

Последњих деценија земље Дунавског региона профилишу своје политике ка што ефикаснијем начину искоришћавања природних потенцијала дунавског слива. Ток Дунава може допринети бољој интеграцији земаља, путем могућности унапређења привредних активности кроз диверсификацију, као и унапређење руралног развоја. Анализа тенденција у пољопривредном сектору земаља Дунавског региона односи се на прву деценију овог века, а започета је детерминисањем значаја пољопривреде у укупној привреди. Развојне перформансе пољопривреде земаља Дунавског региона разматране су кроз производне и извозне перформансе овог привредног сектора, а у свим анализама коришћен је компаративни приступ. У том контексту извршена је анализа раста пољопривредне производње, нивоа и раста парцијалних продуктивности пољопривреде - продуктивности рада и земљишта, као и анализа вредности извоза у односу на ангажовану радну снагу и пољопривредно земљиште.

Кључне речи*: *Пољопривреда, Дунавски регион, парцијалне продуктивности пољопривреде, извозне перформансе.

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PREFERENCES TOWARDS ORGANIC AND FUNCTIONAL YOGHURT IN REPUBLIC OF SRPSKA

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Summary

This article presents the results of the research of preferences towards organic and functional yoghurt, conducted in Republic of Srpska, from January to May, 2014 (n=200). Generally, respondents do not consider whether yoghurt being or not being organic or functional as very important. They partially prefer functional yoghurts, but prefer yoghurts made from conventionally produced milk. For both, organic and functional food, consumers were divided into two segments – the first which considered yoghurt being organic (or functional) among three the most important attributes of a product and the second segments comprising of all other respondents. Hereby, 8% of respondents belonged to the first segment for organic and 20% for functional yoghurt. Compared to second segments, consumers belonging to the first segment for organic yoghurt statistically significantly differ from others by valuating food importance for health more, while for functional yoghurt by assessing own physical health worse.

Key words: *organic food, functional food, market segmentation, marketing management, Republic of Srpska*

JEL*: Q13, M31*

Introduction

Organic and functional food have in common main motive of their consumption, dynamic market development, dependence of future market development upon consumers acceptance of these food, but sometimes also the description of profile of consumers buying them.

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Health can be considered as one of the main motives for buying both organic (Magnusson et al., 2003; Hughner et al., 2007) and functional food (Urala, Lähteenmäki, 2003; Urala, Lähteenmäki, 2004; Verbeke, 2006; Ares, Gambaro, 2007). Having in mind its increasing significance during purchasing decision process related to food, there is also, as expected, dynamic growth of these markets (Dimitri, Oberholtzer, 2009; Menrad, 2003; Frewer et al., 2003).

However, it should be noticed that, as already stated, future market development is dependent on increasing consumers' acceptance of organic (Hughner et al., 2007) and functional food (Frewer et al., 2003). This question gains even greater importance when having in mind that descriptions of profiles (an important step within marketing management process) of organic and functional food consumers are often similar, which will be described in more detail in this paper.

Republic of Srpska can be considered as market in early stages of development, both for organic and functional food. The research conducted at the level of Bosnia and Herzegovina until now, point out functional food market being dominated by brands from other Western Balkans countries (Stojanovic et al., 2010), while organic food market having insufficient supply and lack of regulation (Willer, Lernoud, 2014).

This paper will present the results of the research of preferences towards organic and functional yoghurt in Republic of Srpska. Besides, consumers were divided into two segments – the first which considered yoghurt being organic (or functional) among three the most important attributes of a product and the second segments comprising of all other respondents. Relative sizes of segments preferring organic or functional food are established, characteristics of respondents belonging to these segments are researched and compared to other respondents as well as to each other. The chosen product is yoghurt since being successfully exposed to different innovations (such as fruit yoghurt), while the chosen population is 18 to 30 years old since being important as future market. Market of Republic of Srpska being in early stages of development and scarcely researched until now was of the interest for researching some of the mentioned similarities in relation to organic and functional food.

Theoretical background, literature review and hypotheses development

The theoretical background of this paper are steps within marketing management process (Kotler, 2007). Namely, after marketing research to these steps belong strategic marketing (including market segmentation, targeting and positioning) and tactical marketing (including creating marketing mix, its implementation and control).

Profiling consumers (about which are also noticed similarities among organic and functional food consumers) belongs to market segmentation. These similarities, which will be illustrated regarding gender, age, education and income, can present an obstacle within marketing management process of organic and functional food suppliers and can together with other similarities increase competitiveness among them.

There can be found researches pointing out that women are being more in favour of concept of organic food (Koivisto Hursti, Magnusson, 2003; Lockie et al., 2004; Arbindra et al., 2005; Padel, Foster, 2005, Đokić et al., 2014). At the same time, there are researches suggesting women accept functional food more than men (Childs, Poryzees, 1998; Ares et al., 2009; Urala et al., 2003).

Some researches emphasize older people being organic food consumers (Sandalidou et al., 2002). There are also researches pointing out older consumers are more accepting functional food in terms of being more ready to compromise on liking the product and perceived healthiness (Ares et al., 2008; Verbeke, 2006).

A number of researches describe organic food consumers as more educated (Zepeda, Li, 2007; Cicia et al., 2002; Sandalidou et al., 2002; Loureiro, Hine, 2002; Đokić et al., 2014). At the same time there are researches finding positive connections among consumers' education and certain functional food acceptance (Childs, Poryzees, 1998; De Jong et al., 2003).

Finally, in some researches positive influence of higher income on acceptance of organic food is emphasized (Loureiro, Hine, 2002; Sandalidou et al., 2002; Arbindra et al., 2005; Gracia, de Magistris, 2007; Stolz et al., 2011; Đokić et al., 2014). In addition, there is also established positive relation among consumers' income and positive beliefs about functional food (Childs, Poryzees, 1998).

Described similarities should not suggest that they are always occurring when describing organic and functional food consumers' profile. Furthermore, not that there are discrepancies among profile of organic and functional food consumers, but also among different descriptions of organic food consumers' profile, as well as among different descriptions of functional food consumers' profile. However, when such similarities do occur, problems mentioned regarding marketing management process can be significant.

Having in mind literature review and the level of researched market development, following hypotheses have been proposed:

H1: At the general level, consumers prefer more yoghurt made from organic milk than from conventionally produced milk.

H2: At the general level, consumers prefer more functional yoghurts than yoghurts that are not functional.

H3: Consumers expressing preferences towards yoghurts including functional yoghurts consider more important yoghurt to be functional than consumers expressing preferences towards yoghurts including organic yoghurts consider important yoghurt to be organic.

H4: Consumers who consider yoghurt being organic among three the most important attributes of a product statistically significantly differ from other consumers by some of profile characteristics.

H5: Consumers who consider yoghurt being functional among three the most important attributes of a product statistically significantly differ from other consumers by some of profile characteristics.

H6: Characteristics by which consumers who consider yoghurt being organic among three the most important attributes of a product statistically significantly differ from other consumers are not the same as characteristics by which consumers who consider yoghurt being functional among three the most important attributes of a product statistically significantly differ from other consumers.

Questionnaire

There were two parts of the questionnaire. The first was related to segments' potential characteristics. These questions were defined based on literature, interviews with representatives of food industry and organic food producers, as well as on the potential significance of management implications. Besides gender, age, educational / working status, marital status, presence of children in family, it included questions regarding the different health-related aspect – frequency of having sports activities (never, rarely, once in several weeks, at least once a week, actively), the perceived assessment of physical health (1 to 5), level of agreement regarding confirmation of importance for health (1 to 5 Likert scale), and the presence of a sick family member for whom it is believed that proper diet could have prevented the disease.

In the second part of the questionnaire were given cards with chosen organic or functional yoghurt attribute levels' combinations to be evaluated by consumers. Respondents expressed their preferences toward each of the cards by rating them from 1 to 9. The attributes and attribute levels of yoghurt were defined by using the focus group method with students. Besides, representatives of food industry were consulted. These attributes and attribute levels can be seen in Tables 1 and 2. Having in mind the number of defined attribute levels and their combinations, it was theoretically possible to create 576 combinations (cards) for organic and 864 for functional yoghurt. Nevertheless, following Kuzmanović (2008) an orthogonal design with 34 cards was obtained.

One respondent was filling in only one version of the questionnaire – regarding organic or regarding functional food. It took up to 30 minutes for the respondents to fill in the questionnaire.

Subjects

There were 200 respondents interviewed in several larger towns of Republic of Srpska, from January to May, 2014. Chain referral sampling was used. Structured interviews by means of personal communication with respondents with the use of questionnaire were conducted. The respondents were 18 to 30 years old.

Within the sample of 100 respondents that filled in the questionnaires relating to yoghurts including organic, there were 48.0% of males and 52.0% of females. The average age

of respondents was 24.46 years (standard deviation 3.664). 56.0% of the total number of respondents are students, 29.0% are employed, and 15.0% are unemployed; 5.0% of the total number of respondents are married and 95.0% single; 8.0% have children, and 92.0% do not.

Within the sample of 100 respondents that filled in the questionnaires relating to yoghurts including functional, there were 50.0% of males and 50.0% of females. The average age of respondents was 23.07 years (standard deviation 4.269). 48.0% of the total number of respondents are students, 36.0% are employed, and 16.0% are unemployed; 2.0% of the total number of respondents are married and have children, while 98.0% are single and do not have children.

Data analysis

Data analysis was performed by using MS Office Excel and SPSS.

Market segmentation was conducted based on consumer preferences identified by conjoint analysis. Ratings-based conjoint analysis was used (subject=id had been used in syntax in conducting conjoint analysis). The respondents were then divided into two segments – the segment which values the organic (in the second case functional yoghurt – both probiotic and with added calcium) as the first, the second or the third most important attribute of a product (named as the first segment in the text of this paper) and the segment that values any other attribute as the first, the second or the third most important most important or prefers conventional yoghurt or yoghurt that is not functional (named as the second segment in the text of this paper).

Analysis was conducted for investigating whether consumers from these two segments were statistically significantly different regarding chosen characteristics. Pearson Chi-Square test was used regarding gender, educational / working status, marital status, presence of children in family and the presence of a sick family member for whom it is believed that proper diet could have prevented the disease. Independent samples T-test was used considering age, the perceived assessment of physical health and level of agreement regarding confirmation of importance for health. Mann-Whitney U test was used regarding respondents' frequency of having sports activities.

Results

The results of conjoint analysis for organic and functional yoghurt are given in Tables 1 and 2.

The respondents find packaging volume as the most important attribute of yoghurt (25.426%), whereas they prefer yoghurt of 0.2 litre volume the most. The second and the third most important attributes are added flavours (18.658%) and milk fat content (18.255%). Hereby, respondents are opened to one innovation (fruit yoghurt), but not to the other (yoghurt with cereals), so it can be suggested that such openness is influenced by the taste. At the same time, they prefer yoghurt with 1.5% milk fat content the most,

then with 0% and finally with 2.8%. The fourth by importance is the attribute related to packaging (10.566%), whereas consumers prefer cardboard as packaging material. The attribute of the greatest interest for this research - related to milk production is only 9.272% important. Hereby, respondents prefer yoghurt made of conventionally produced milk rather than of organic milk. There are only two attributes of yoghurt less important than previous – viscosity (9.148%) and taste (8.675%). However, their level of importance is very close to one of the attribute related to milk production. In addition it can be stressed that consumers prefer thinner yoghurts with mild taste.

Table 1. Conjoint analysis results – organic yoghurt

Product attributes (and order according to significance level)	Significance level	Attribute levels (and order according to respondents' preferences)	Utility estimates
viscosity (6)	9.148	thicker (2)	0.166
		thinner (1)	-0.166
taste (7)	8.675	mild (1)	0.141
		sour (2)	-0.141
added flavour (2)	18.658	none (2)	-0.023
		fruit (1)	0.149
		cereals (3)	-0.126
milk fat content (3)	18.255	0% (2)	0.048
		1.5% (1)	0.052
		2.8% (3)	-0.1
milk production (5)	9.272	organic product (2)	-0.062
		conventional product (1)	0.062
packaging volume (1)	25.426	0.2 litre (1)	0.357
		0.5 litre (4)	-0.293
		1 litre (2)	0.1
		2 litres (3)	-0.164
packaging material (4)	10.566	cardboard (1)	0.146
		plastic (2)	-0.146
Constant			4.879

Source: Authors' research

Although partially changed in order, three of the most important attributes by significance remain for the sample expressing preferences towards yoghurt, including functional – added flavour (23.799%), milk fat content (17.577%) and packaging volume (15.008%). However, the preference towards certain levels of these attributes changed in this sample. Hereby, respondents prefer mostly yoghurt with no additional flavours and then fruit yoghurt. Besides, the level of their preference towards yoghurt rises as rises its milk fat content. They also prefer yoghurts of 0.5 litres the most. The fourth by importance is the attribute related to taste (12.505%), whereas consumers prefer mild taste of yoghurt. The attribute of the greatest interest for this research - related to functional characteristics is only 11.759% important. Hereby, respondents prefer yoghurt with added calcium, then with no functional characteristics and finally probiotic. Following attribute of yoghurt is of the similar importance – viscosity (11.603%), whereas consumers prefer thinner

yoghurt. Finally, the least important is packaging material (7.751%), where consumers prefer yoghurt in cardboard packaging material.

Table 2. Conjoint analysis results – functional yoghurt

Product attributes (and order according to significance level)	Significance level	Attribute levels (and order according to respondents' preferences)	Utility estimates
viscosity (6)	11.603	thicker (2)	-0.283
		thinner (1)	0.283
taste (4)	12.505	mild (1)	0.318
		sour (2)	-0.318
added flavour (1)	23.799	none (1)	0.173
		fruit (2)	0.25
		cereals (3)	-0.424
milk fat content (2)	17.577	0% (3)	-0.385
		1.5% (2)	0.026
		2.8% (1)	0.359
functional characteristics (5)	11.759	probiotic (3)	-0.225
		with added calcium (1)	0.152
		none (2)	0.073
packaging volume (3)	15.008	0.2 litre (2)	-0.006
		0.5 litre (1)	0.052
		1 litre (4)	-0.033
		2 litres (3)	-0.013
packaging material (7)	7.751	cardboard (1)	0.016
		plastic (2)	-0.016
Constant			5.366

Source: Authors' research

When respondents rating preferences toward yoghurts, including organic, were divided into two segments – the first which considered yoghurt being organic among three the most important attributes of a product and the second segments comprising of all other respondents, 8% of respondents belonged to the first segment and 92% to the second segment. Similarly, when respondents rating preferences toward yoghurts, including functional, were divided into two segments – the first which considered yoghurt being functional (both probiotic and with added calcium) among three the most important attributes of a product and the second segments comprising of all other respondents, 20% of respondents belonged to the first segment and 80% to the second segment. Descriptive statistics regarding two segments' characteristics for organic and functional yoghurts are given in Tables 3 and 4, respectively.

When considering results for the respondents rating yoghurts, including organic, the results of Pearson Chi-Square test for gender are: $\chi^2(df=1)=2.540$, $p=0.111>0.05$; for occupation are: $\chi^2(df=1)=0.309$, $p=0.857>0.05$; for marital status are: $\chi^2(df=1)=0.458$, $p=0.499>0.05$; for parenthood are: $\chi^2(df=1)=0.239$, $p=0.625>0.05$; and for share of persons who believe that proper diet could have prevented the disease of a close

person: χ^2(df=1)=0.725, p=0.395>0.05. The results of the Independent samples T-test, again for respondents rating yoghurts, including organic, for age are: t(df=98)= -0.570, p=0.570>0.05; for perceived assessment of physical health are: t(df=98)=-0.562, p=0.575>0.05; and for valuating food importance for health are: t(df=98)=-4.324, p=0.000<0.05. The results of Mann-Whitney U test regarding frequency of having sports activities for the respondents rating yoghurts, including organic, are: Z= -1.487, p=0.137>0.05.

Table 3. Characteristics of two segments – organic yoghurt

Characteristics			The first segment	The second segment
gender	male	%	75.0	45.7
	female	%	25.0	54.3
age		M (SD)	23.75 (3.808)	24.52 (3.666)
occupation	Student	%	50.0	56.5
	employed	%	37.5	28.3
	unemployed	%	12.5	15.2
marital status	Single	%	100	94.6
	Married	%	0.0	5.4
parenthood	Yes	%	12.5	7.6
	no	%	87.5	92.4
frequency of having sports activities		MD (MR)	4 (64.75)	3 (49.26)
perceived assessment of physical health		M (SD)	4.50 (0.535)	4.35 (0.748)
valuating food importance for health		M (SD)	5.00 (0.000)	4.70 (0.675)
proper diet could have prevented the disease of a close person	Yes	%	12.5	26.1
	No	%	87.5	73.9

Source: Authors' research

Table 4. Characteristics of two segments – functional yoghurt

Characteristics			The first segment	The second segment
gender	male	%	35.0	53.8
	female	%	65.0	46.3
age		M (SD)	23.30 (3.895)	23.01 (4.379)
occupation	student	%	45.0	48.8
	employed	%	45.0	33.8
	unemployed	%	10.0	17.5
marital status	single	%	100.0	97.5
	married	%	0.0	2.5
parenthood	yes	%	0.0	2.5
	no	%	100.0	97.5
frequency of having sports activities		MD (MR)	3 (51.15)	3 (50.34)
perceived assessment of physical health		M (SD)	3.90 (0.852)	4.28 (0.711)
valuating food importance for health		M (SD)	4.75 (0.444)	4.60 (0.722)

Characteristics			The first segment	The second segment
gender	male	%	35.0	53.8
	female	%	65.0	46.3
age		M (SD)	23.30 (3.895)	23.01 (4.379)
proper diet could have prevented the disease of a close person	yes	%	45.0	32.5
	no	%	55.0	67.5

Source: Authors' research
Note: M – mean, SD – standard deviation, MD – median, MR – mean rank

When considering results for the respondents rating yoghurts, including functional, the results of Pearson Chi-Square test for gender are: $\chi^2(df=1)=2.250$, $p=0.134>0.05$; for occupation are: $\chi^2(df=1)=1.172$, $p=0.557>0.05$; for marital status are: $\chi^2(df=1)=0.510$, $p=0.475>0.05$; for parenthood are: $\chi^2(df=1)=0.510$, $p=0.475>0.05$; and for share of persons who believe that proper diet could have prevented the disease of a close person: $\chi^2(df=1)=1.099$, $p=0.295>0.05$.

The results of the Independent samples T-test, again for respondents rating yoghurts, including functional, for age are: $t(df=98)=0.268$, $p=0.789>0.05$; for perceived assessment of physical health are: $t(df=98)= -2.025$, $p=0.046<0.05$; and for valuating food importance for health are: $t(df=98)=0.886$, $p=0.378>0.05$.

The results of Mann-Whitney U test regarding frequency of having sports activities for the respondents rating yoghurts, including functional, are: $Z= -0.115$, $p=0.908>0.05$.

Discussion and conclusions

When looking at the results of the research at general level, it can be concluded that output of conjoint analysis suggests that first hypothesis is not confirmed, i.e. that at this level consumers actually prefer more yoghurt made from conventionally produced milk than from organic milk. Considering results at the same level, it can be concluded that the second hypothesis referring to consumers preferring more functional yoghurts than yoghurts that are not functional is partially confirmed since they prefer mostly yoghurt with added calcium, then yoghurt with no functional characteristics and finally probiotic, also belonging to functional yoghurts. These results can be understood in the context of organic and functional food market of Republic of Srpska being in early stages of development, but also in the context that these food markets are generally considered as niche-markets.

The results relating to the third hypothesis support further previous conclusion. Although this hypothesis is confirmed, i.e. consumers expressing preferences towards yoghurts including functional yoghurts consider more important yoghurt to be functional than consumers expressing preferences towards yoghurts including organic yoghurts consider important yoghurt to be organic, the level of significance of the attribute for yoghurt being organic and functional is rather low. When it comes to functional yoghurt,

the attribute related to functional characteristics is only 11.759% important, taking fifth position (out of seven attributes). Similarly, considering organic yoghurt, the attribute related to milk production is only 9.272% important, also taking fifth position (out of seven attributes). If one has in mind previously mentioned, that when analysing preferences towards levels of these attributes consumers prefer conventional over organic yoghurt and yoghurt with added calcium more than yoghurt with no functional characteristics and then probiotic, broader picture of this developing market emerges and confirmation of the essence of this hypothesis that functional food market is at some extent more developed can be accepted.

Within this paper is performed market segmentation in order to search for market segments dominantly preferring organic and functional yoghurt. As already explained, two segments were identified in both cases – the first which considered yoghurt being organic (or functional) among three the most important attributes of a product and the second segments comprising of all other respondents. Relative size of the first segments - 8% of respondents belonging to it for organic and 20% for functional yoghurt – further support that functional food market is more developed.

When the segments especially preferring organic or functional yoghurt (reasonably to be targeted in early stages of market development in order to increase their consumption further) are compared one by one to other respondents rating preferences toward yoghurts including organic and functional, the fourth and the fifth hypothesis are confirmed. Namely, both, consumers who consider yoghurt being organic among three the most important attributes of a product, as well as consumers who consider yoghurt being functional among three the most important attributes of it, statistically significantly differ from other consumers by some of profile characteristics. Hereby, consumers belonging to the first segment for organic yoghurt statistically significantly differ from others by valuating food importance for health more, while for functional yoghurt by assessing own physical health worse. This is also confirmation of the sixth hypothesis since characteristics by which consumers who consider yoghurt being organic among three the most important attributes of a product statistically significantly differ from other consumers are not the same as characteristics by which consumers who consider yoghurt being functional among three the most important attributes of a product statistically significantly differ from other consumers. However, when analysing these differences, one should bear in mind the number of respondents belonging to segments especially preferring organic or functional yoghurt.

Generally, the results confirm the existence of differences among organic and functional food consumer profile at market in early stages of its development. As these markets potentially grow, that is also dependent on supply side, generic promotion, state regulation etc. similar researches could be conducted. Future researches could also focus on different food category, as well as on research of broader sample and including additional variables, such as actual food consumption, when disposable at this market.

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PREFERENCIJE PREMA ORGANSKOM I FUNKCIONALNOM JOGURTU U REPUBLICI SRPSKOJ

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Apstrakt

Rad predstavlja rezultate istraživanja preferencija prema organskom i funkcionalnom jogurtu, sprovedenog u Republici Srpskoj, od januara do maja 2014. (n = 200). Generalno, ispitanici ne smatraju posebno važnim da li je jogurt organski ili nije, odnosno funkcionalni ili nije. Potrošači delimično preferiraju funkcionalne jogurte, ali i jogurte od konvencionalno proizvedenog mleka. Ispitanici su i za organsku i za funkcionalnu hranu bili podeljeni u dva segmenta – prve, koji vrednuju to da je jogurt organski (u drugom slučaju, funkcionalni) među tri najvažnija atributa proizvoda, i druge segmente koji obuhvataju sve ostale ispitanike. Pri tome, 8% ispitanika pripada prvom segmentu za organski, a 20% za funkcionalni jogurt. U odnosu na drugi segment, potrošači koji pripadaju prvom segmentu za organski jogurt statistički se značajno razlikuju po većem vrednovanju važnosti hrane za zdravlje, dok potrošači koji pripadaju prvom segmentu za funkcionalni jogurt po lošijoj proceni sopstvenog fizičkog zdravlja.

Ključne reči: *organska hrana, funkcionalna hrana, segmentacija tržišta, marketing menadžment, Republika Srpska*

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ANALYSIS AND PREDICTION OF TOMATO PRICE IN SERBIA

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Summary

Tomato is one of the most important vegetable crops in Serbia. The average annual production of tomato has been about 174,000 tones.

The topic of this research paper is the analysis of the changes and the future tendencies of the price parameters of tomato in Serbia, with the aim to forecast the real, absolute and relative (the parity with wheat) tomato price, i.e. to forecast the economic conditions for the production.

The analysis of the time series (1994-2010) has been done by means of descriptive statistics, and the suitable ARIMA models were used for the forecast (2011-2015).

The average real tomato price in the period 1994-2010 was 0.17 EUR/kg, and the average parity price for tomato/wheat was 1.5. The tendencies for the real growth of tomato price as well as the increase in the parity price with wheat were noticed during the analyzed period.

A further real growth of tomato price and the growth of the parity with wheat have been predicted for the forecast period. This means that both absolute and relative price conditions in tomato production have been improving. The predicted tomato price in 2015 is 0.22 EUR/kg, and the parity price with wheat is 2.88, which is considerably higher than the average in the observed time period.

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The models for the forecast indicated that the previous year's tomato price, i.e. parity, has a considerable influence over the formation of tomato price and the establishing of the parity with wheat.

Key words: *tomato, price, Serbia, prediction*

JEL:*Q11, C53*

Introduction

Tomato is one of the most important vegetables in Serbia. The average agricultural land under tomato in the period 1991-2010 was nearly 20.300 hectares. This is more than pepper (18.900 ha) and other vegetable crops, and less than only onion (20.500), cabbage and kale (21.200) and beans (23.800). The cropland showed relative stability (the coefficient of variation 4.16%). It fluctuated between 18.400 and 21.200 hectares and displayed the tendency towards a slight upward trend of the average annual rate of 0.29%.

The average annual tomato production was around 174.000 and it varied from140 to 200 thousand tons a year. Tomato production indicates a trend towards stagnation. of Tomato yield in Serbia was 8.6 tons per hectare on average, and it varied between 7.4 and 9.9 tons/ha.

The topic of this research is the analysis of the changes and the future tendencies of the price parameters of tomato in Serbia.

Considering the importance of tomato production, the existence of the possibility to apply the methods of the scientific forecasting, and the course of the future agricultural development, the aim of this research is hereby defined: The prediction of the change of the absolute and relative (parity) price parameters of tomato in Serbia.

The forecasting is based on time series data. Autoregressive–moving-average (ARMA) models or a class of ARIMA models are often applied to this end. ARIMA models are widely used in the area of forecasting and there are quite a number of publications where the implementation of this model and its validity check were examined. The works of Box, Jenkins, Pen and other authors are significant on account of their methodological input. In their works, by examining these models, they have given their contribution to the development of the models. For instance, in her study, Fasen (2015) assesses multivariate autoregressive–moving-average (ARMA) models in the continuous-time and their dependence estimation (MCARMA model).

As a separate case, a CARMA (one-dimensional MCARMA) process is considered. For a CARMA process, Bartlett's formula for the sample autocorrelation function is proven. Yining (2015) describes semi parametric time series models with innovations for a log-concave distribution. He proposes a general maximum likelihood framework which allows a simultaneous estimation of the parameters of the model and density of the innovations. This framework can be easily adapted to many well-known models, including the class of autoregressive–moving-average (ARMA) models, the class of

GARCH models and the class of ARMA-GARCH models.

A fair number of authors have dealt with the forecast in agriculture. Nikolić-Đorić et al. (1993) analyse the time series of the production and the price of pigs and maize and ascertain that there are seasonal, cyclical and random oscillations present in the series. They predict the parity price trend for pig-maize using a proper ARIMA model.

In their research, Garcia-Martinez et al. (2008) state that the crop production in Spanish Mediterranean region is under a strong influence of market liberalization which drives the farms to become more competitive as producers, and also to meet consumers' expectations in terms of the quality and price of a product. The authors' objective is to assess the economic climate for the production of tomato and pepper in greenhouses. By applying ARIMA models in the forecasting of price trends of these products, they estimate the expected development of purchasing power, which leads to decisions about the choice of cultivars, product scheduling, heating etc. In other words, forecasting is used for production planning and commercial activities in the production of tomato and pepper in greenhouses.

Qaddoum et al. (2013) analyse tomato production in greenhouses. In the study, the authors propose the automatic tomato yield predictor modelas a possibility foranticipatingweekly fluctuations in the yield, which could avert problems of both reduced yield and overproduction.The prediction parameters used by the authors consist of variables inside the greenhouse, temperature, CO_2, vapour pressure deficit (VPD) and radiation, as well as past yield data. The model for the tomato yield forecasting was constructed by the analysis of the collected data using an intelligent system named "Evolving Fuzzy Neural Network" (EFuNN). The given results demonstrate that the model predicted weekly fluctuations of the yield with an average accuracy of 90%.

The prediction of tomato price trend is the topic which Zhang et al. (2014) focus on as well. The authors believe that an accurate price prediction of agricultural products is a useful method for making a proper record of the turnover of agricultural products and agricultural production, and for creating the balance between supply and demand of the agricultural products. For the application of Wavelet neural network, as a method of forecasting, they chose retail tomato prices. The result of the applied process is a prediction model with an error less than 0.01, and the correlation between the predicted value and real value is 0.908, which indicates that the model will predict tomato price trend accurately.

According to Adanacioglu and Yercan (2012) forecasting tomato prices can provide critical and useful information to tomato growers making production and marketing decisions. The authors have analysed the seasonal price variation of tomato crop and have developed a Seasonal ARIMA (SARIMA) model to forecast the monthly tomato prices at wholesale level in Antalya, Turkey, on the basis of reported prices from 2000 to 2010.

Novković et al. (1994) examine how parity prices for fattening pigs/maize depend on the turnover of the fattening pigs and maize, and, based on the analysis, they forecast the trend until the end of the 20th century.

Nikolić-Đorić et al. (2004), deal with the problem of the development of the social product in the agriculture of Serbia.

Novković et al. (2005/6), perform an analysis on the time series of the parity prices for wheat/mineral fertilizer, and, with the use of a certain ARIMA model, they predict the parity trend in the following five-year period.

Novković et al. (2006) analyse animal husbandry in Vojvodina and determine the directional movement of certain livestock species and the production characteristics of the animal husbandry at the beginning of the 21st century.

Mutavdžić (2009), by means of quantitative model based on time series, encompassed the prediction of the total land under vegetables, and also the land, yield and total output of potato, beans and tomato in Vojvodina, in the period 2005-2010. In her forecast, she also used ARIMA models, based on the time series of the statistical data from the period 1950-2005. In the analyzed period, the land under vegetables in Vojvodina is characterized by the low presence of the arable land and the slight downward trend. The predicted figures and the charts presenting the original and predicted figures of the land under vegetables confirm the previously ascertained downward trend. After taking the whole examined period under consideration, it can be concluded that the shrinking of the land is followed by the increase of the intensity of vegetable production, i.e. a considerable increase in the yield of all vegetable crops.

Mutavdžić et al. (2011, 2011a) while analyzing the tendencies in the agriculture development in Serbia in the period 2001-2010, reached the conclusion that vegetable production in Serbia had the following characteristics:

- The harvested areas under tomato, peas, cabbage and kale, pepper, carrot and cucumber increased, whereas those under potato, onion, melon, watermelon and garlic became smaller, when compared to the previous decade (1991-2000);

- The average yield of all the observed vegetable crops went higher (except beans);

-Total vegetable production in Serbia has increased significantly, primarily as a consequence of an increase in the production intensity i.e. the higher yield. The average annual rise in the production is as follows: peas 56%, pepper 26%, carrot 20%, potato 18%, cucumber 17%, cabbage and kale 13%, watermelon 12%, tomato and onion 5% and garlic 2%;

- The following vegetables display rising production tendency: tomato, peas, onion, pepper, beans, carrot and cucumber. However, potato, watermelon and garlic show downward trend, while cabbage and kale practically stagnate.

Novković et al. (2012, 2013, 2013a) do the analysis and deal with the tendencies of the development of vegetable production in Vojvodina. In the period 2001-10, vegetable production in Vojvodina is described in the following way:

- The harvested areas under the studied vegetables shrank with almost all the vegetable

crops when compared to the previous period, except for the land under peas, pepper and garlic, which grew slightly, relative to the previous decade;

- The average yield of all the observed vegetable crops was higher (except tomato);

-Total vegetable production rose significantly, primarily as a result of the increase in the intensity of the production, i.e. the higher yield of almost all the species (except tomato and beans).

Methods and data sources

The defined topic and aim of the research have created a need to adopt the appropriate quantitative methods i.e. the methods of statistical analysis. The statistical methods used in this paper can be classified into two groups:

- Methods of descriptive analysis;
- Analytical and statistical methods.

Methods of the descriptive statistics are to be used for the analysis of tomato price changes in the period 1994-2010. The basic statistical indicators area follows: the average value of the phenomenon, extreme values (minimum and maximum), coefficient of variation and the rate of change.

In an attempt to forecast the observed price changes, we have used the method of time series analysis, i.e. ARIMA models based on the time series analysis have been applied. The time series analysis has encompassed tomato price characteristics in the stated period, and the prediction refers to the future five-year period, 2011-2015.

The base for the analysis and prediction of tomato price was the average annual price of this vegetable. Since this is about the economic element, i.e. the price, we need to consider the inflation rates as well. Hence, the analysis and prediction of tomato price headed in two directions:

1. Analysis and prediction of the absolute, deflated tomato prices;
2. Analysis and prediction of the relative prices, i.e. the parity price of tomato with the price of wheat.

The absolute average prices of tomato are deflated, i.e. reduced to the fixed prices from 1994, based on the index of retail prices, which is the most adequate inflation indicator. In 1994, the parity of dinar with German mark 1:1 was established. As a result, the deflated vegetable prices corresponded to the same prices in German mark. If divided by 2 (by 1.95, more precisely), one could get the real value of the prices in euro.

The series of the observed phenomena in this paper are acquired, or formed, based on the publications on statistics from the Statistical Office of the Republic of Serbia. The statistical software Statistica 10, Eviews 3.1 and SPSS have been used for the analysis of the collected data.

Analysis and prediction of tomato price

The average tomato price in the analyzed period was 0.34 RSD/kg, i.e. 17 cent euro per kilogram. The price varied between 0.17 and 0.60 RSD/kg. The tomato price coefficient of variation was 35.67%. The average annual rate of change of tomato price was the highest of all the observed vegetable crops, and it averaged out at 2.13% per year. Hence, tomato had the highest rising price tendency of all the studied vegetable crops, i.e. it showed the tendency towards the biggest improvement of the economic (price) conditions for production.

Predicted tomato price for the following five-year period indicates significant oscillations, i.e. the alternately rises and falls, year in year out (**Table 1**).

Table1. Parameters of the model for tomato price forecast

	Input: Ceneparadajza Transformations: D(1) Model:(1,1,0) MS Residual= ,01475					
Paramet.	Param.	Asympt. Std.Err.	Asympt. t(15)	p	Lower 95% Conf	Upper 95% Conf
p(1)	-0,729674	0,194269	-3,75600	0,001907	-1,14375	-0,315600

Source: Result of research

The predicted values are obtained based on the evaluated model (**Table 2**) which indicates that tomato price of the current year is significantly conditioned by the previous year's price.

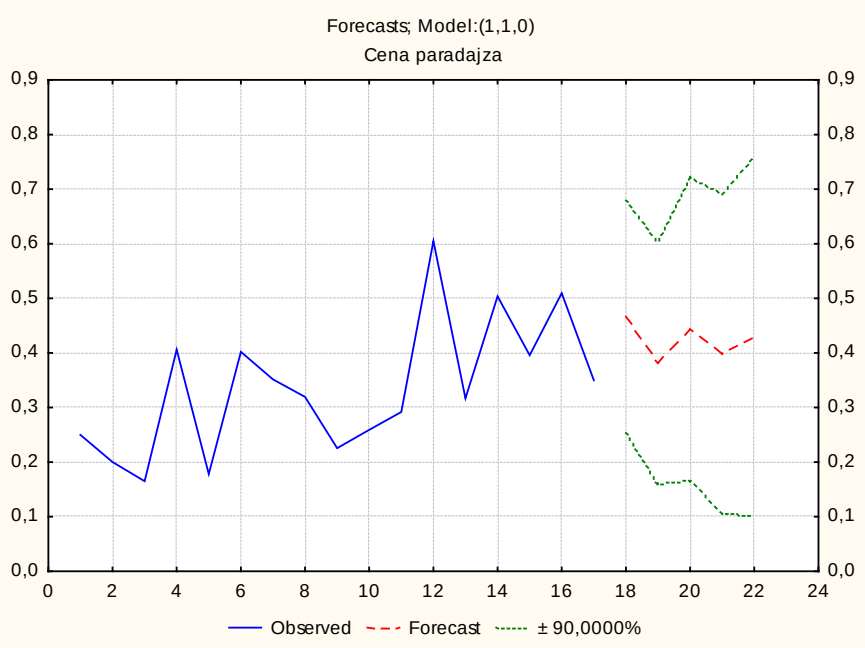
Table 2. Tomato price forecast (2011-15)

	Forecasts; Model:(1,1,0) Input: ceneparadajza Start of origin: 1 End of origin: 17			
CaseNo.	Forecast	Lower 90,0000%	Upper 90,0000%	Std.Err.
18	0,466271	0,253363	0,679179	0,121450
19	0,381323	0,160773	0,601874	0,125809
20	0,443307	0,164285	0,722329	0,159164
21	0,398079	0,105449	0,690709	0,166926
22	0,431081	0,102904	0,759258	0,187203

Source: Result of prediction

The oscillations in the price movement of tomato are affirmed in the chart below (Graph 1).

Graph 1. Tomato price changes



Source: Result of prediction

Analysis and prediction of tomato parity price

The average parity price of tomato with wheat during the analyzed period was 1.58. It means that one kilogram of tomato cost more than one and a half kilogram of wheat. The parity fluctuated between 0.63 and 3.31. The coefficient of variation of the parity price for tomato is by far the highest of all the vegetable crops and totals 47.85%. The average annual parity change rate of tomato price with wheat was the highest as well, and came to 1.84% per year. This means that tomato had the most pronounced tendency towards price growth of all the observed vegetable crops.

The evaluated model for the analysis and prediction (**Table 3**) indicates that the parity for tomato/wheat also varies significantly in the forecast period.

Table 3. Parameters of the model for the parity price prediction for tomato/wheat

	Input: PAR/PSEN: =paradajz/psen (cenepovSRbija) Transformations: D(1) Model:(1,1,0) MS Residual= ,62250					
Paramet.	Param.	Asympt. Std.Err.	Asympt. t(14)	p	Lower 95% Conf	Upper 95% Conf
Constant	0,067439	0,120952	0,55757	0,585943	-0,19198	0,326856
p(1)	-0,731116	0,212962	-3,43309	0,004038	-1,18787	-0,274359

Source: Result of prediction

The parity value of the current year is greatly influenced by the parity value of the previous year.

The values of the parity for tomato/wheat in the forecast period alternately increase and decrease year in year out, and they fluctuate between 2.25 and 2.91 (**Table 4**).

Table 4. The prediction of the parity prices for tomato/wheat (2011-2015)

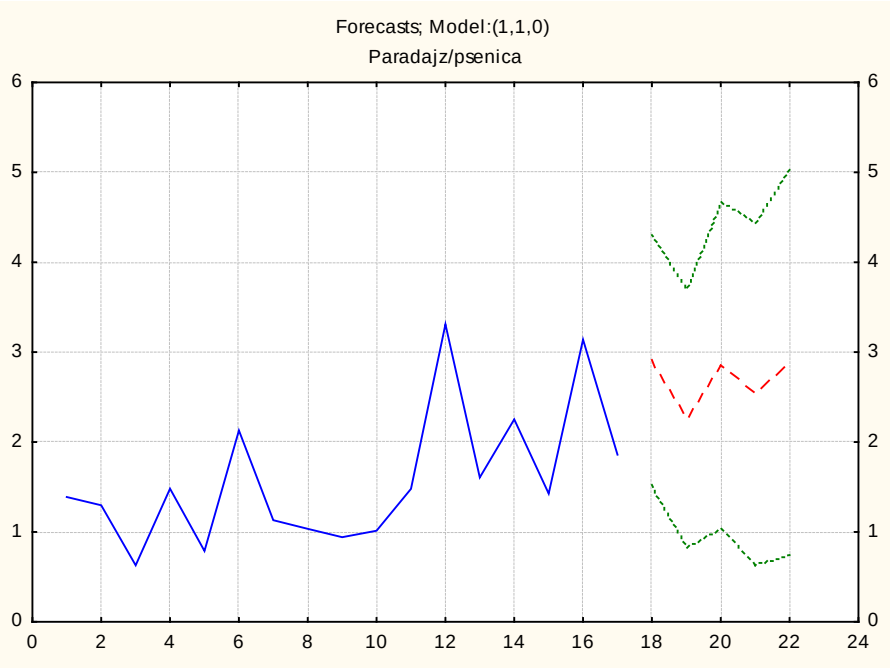
	Forecasts; Model:(1,1,0) Seasonal lag: 12 (cenepovSR Input: PAR/PSEN: =paradajz/psen Start of origin: 1 End of origin: 17			
CaseNo.	Forecast	Lower 90,0000%	Upper 90,0000%	Std.Err.
18	2,912373	1,522721	4,302025	0,788988
19	2,259569	0,820559	3,698579	0,817011
20	2,853590	1,032258	4,674922	1,034078
21	2,536037	0,626582	4,445492	1,084111
22	2,884951	0,743041	5,026860	1,216089

Source: Result of prediction

At the end of the forecast period (year 2015) one kilogram of tomato will have the value of 2.9 kilograms of tomato.

The stated characteristics are presented in the chart showing the changes of this parity (Graph 2).

Graph 2. The changes of the parity prices for tomato/wheat



Source: Result of prediction

Conclusion

Tomato is vegetable species which has significantly improved its absolute and relative price position in Serbia. Of all analysed vegetable crops (potato, bean, pepper, onion and cabbage), this crop noted the highest growth rate of the real tomato price and the parity with wheat. The previous year's phenomena values are statistically significant for the prediction of price parameters.

The research in this paper has indicated the following:

- The average real price of tomato in the period 1994-2010 was 170 EUR/ton (340 RSD/kg, according to fixed prices from 1994);

- The average parity price for tomato/wheat was 1.58;

- During the analyzed period, the tendencies for the real growth of tomato price (at the rate of 2.13% per year) and the parity price with wheat (1.84%) are present;

- The real growth of tomato price and the increase of parity with wheat have been predicted for the forecast period (2010-15) as well. It means that both absolute and relative price conditions in tomato production are being improved. The anticipated tomato price in 2015 is 220 EUR/ton (430 RSD/kg, according to fixed prices from1994). The expected parity price of tomato with wheat in 2015 is 2.88. This means that a kilogram of tomato will have the average value of 2.88 kilograms of wheat, which is much higher than the average in the examined period;

- The models for the prediction indicated that the previous year's tomato price and parity occupy an important role in the formation of tomato price and the parity with wheat.

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АНАЛИЗА И ПРЕДВИЂАЊЕ ЦЕНЕ ПАРАДАЈЗА У СРБИЈИ

Dragan Ivanišević[5], Beba Mutavdžić[6], Nebojša Novković[7], Nataša Vukelić[8]

Сажетак

Парадајз је једна од најзначајнијих повртарских култура у Србији. Просечна годишња производња парадајза износила је око 174.000 тона.

Предмет ових истраживања је анализа промена и будуће тенденције ценовних параметара парадајза у Србији, са циљем да се предвиди реална, апсолутна и релативна (паритет према пшеници) цена парадајза, односно да се предвиде економски услови за производњу.

За анлализу временске серије (1994-2010) примењена је дескриптивна статистика, а за предвиђање (2011-2015) одговарајући АРИМА модели.

Просечна реална цена парадајза у периоду 1994-2010. била је 0.17 евра/кг, а просечан паритет цена парадајз/пшеница износио је 1.5. У анализираном периоду присутне су тенденције реалног пораста цене парадајза и паритета цена према пшеници.

У периоду предикције предвиђа се и даље реални раст цене парадајза и повећање паритета према пшеници. То значи да се побољшавају и апсолутни и релативни ценовни услови у производњи парадајза. Предвиђена цена парадајза у 2015. години је 0,22евра/кг, а паритет цене према пшеници 2.88, што је знатно више од просечног у посматраном периоду.

Модели за предвиђање показали су да на формирање цене парадајза, као и успостављање паритета према пшеници, значајан утицај има цена парадајза, односно паритет из претходне године.

Кључне речи: парадајз, цена, Србија, предвиђање

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ANALYSIS OF SUBVENTIONS FOR AGRICULTURE IN REPUBLIC OF SERBIA AND REPUBLIC OF SRPSKA

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Summary

In this paper, a comparative analysis of subventions for agriculture and rural development is conducted, based on the budgets of Republic of Serbia and Republic of Srpska. Based on the analysis of the gross value added and the subvention amount in the period 2008-2013, it is concluded that there is no country with the causatively-consequent connection between the subvention volume and gross value added which ensigns to inadequate policy of stimulations.

Besides that, it is noticed that there is no clear trend in the level of assets appropriation, as well as the structure of subvention beneficiaries, which refers that the policy of agricultural stimulation and village in none of the countries has the label of long-term elaborated goals, but it is more the product of current movements in public revenues, i.e. short-term defined political-economic priorities.

Key words: *Agriculture, Subventions, Republic of Serbia, Republic of Srpska*

JEL: *E62, H24, Q14*

Introduction

The food assurance is today one of the most important strategic goals everywhere in the world. Republic of Serbia and Republic of Srpska identified the agriculture and rural development as the areas of special interest for the growth of gross-social (Cvijanović, Mihailović, Vuković, 2014), and the available resources in this area are considered to be among the most important available resources.

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According to that, it is expected to conduct the adequate policy of agricultural and village support firstly through budget expenditures. Stable and constantly growing budget expenses in this area refer to the permanent organ appropriation of the economic policy to develop and strengthen the agricultural production sector.

In our work we conduct the expenses analysis of the subventions in Republic of Srpska and Republic of Serbia in the period from 2008-2013, based on which it can be concluded about the agrarian support and the quality of agrarian policy, as well as the comparison of the countries observed, according to this parameter.

Data sources and used methodology

In this paper, with the analysis of the statistical data, firstly the analysis of the subvention influence to the gross value added in agriculture during the observed years is conducted, followed by the comparative analysis of the budget expenses to the subventions in agriculture and its effects in Republic of Serbia and Republic of Srpska.

Besides that, by the usage of the parallel-legal method the legal background is analyzed, i.e. the security of all the legal solutions, which enables the subvention distribution in a legal and rightful way, stimulating the balanced development of all agricultural sectors.

Based on the analysis of the given points, the conclusions on the effectiveness of the republican subventions in both economies are made, so the certain directions are given for the future expenses.

The official statistic data were used for the analysis. The data in the gross-social product and gross value added in the agriculture in Republic of Serbia are taken from the Strategy of agriculture and rural development of Republic of Serbia for the period from 2014-2020. The data on the subventions are taken from the Bulletin of public finances no 102.

The data used for Republic of Srpska which refer to gross-social product and gross value added are from the website of the Investment-development bank, i.e. the official statistics.

The data on the subvention participation for the agricultural production in the total budget expenses are from author's calculations and based on the Law on budgets for every observed year. The points are taken from the adopted budgets of Republic of Srpska for the referred year. The calculation was performed by calculating subvention part (from the common budget part under the name the Subvention for the stimulation of the development of agriculture and village, budget code 414100, i.e. 614400 according to the economic classification) in the total budget expenses of the Republic.

The significance of the subvention for the development of agriculture and village in Republic of Srpska

The main economic potential of the Republic of Srpska beside hydro potential and mineral raw materials is considered to be the fertile land and forests.

Republic of Srpska has significant surfaces of fertile land. The availability of the agricultural surfaces is estimated to be around 0.952 hectares per inhabitant. The agricultural production and agricultural services are the occupation of the 221,000 households in which there are around 800,000 inhabitants which is around 57.1% of the total population. (The data downloaded from the webpage www.irbrs.org, entered 1st November 2014)

However, the available capacities are not used enough. From the point of exchange, the annual import of the agricultural products is on the level of 350 million dollars, while the export is 30 million dollars, which shows that the cover of export by import is around 87% (The strategy of the agricultural development of Republic of Srpska, 2006).

The review of the agricultural participation in the regeneration of the gross-social product is given in the following table.

Table 1. The agricultural participation in the total Gross domestic product (GDP) and Gross value added (GVA) in Republic of Srpska (in thousands BAM)

Year	GDP	GVA in agriculture (in thousands BAM)	GVA total	In % from the total GVA	GVA in agriculture in % from GDP
2008	8,490,642.00	971,477	6,972,026	13.9	11.4
2009	8,236,270.00	917,052	6,888,593	13.3	11.1
2010	8,318,217.00	876,111	6,872,931	12.7	10.5
2011	8,682,397.00	882,630	7,132,366	12.4	10.2
2012	8,584,972.00	836,493	6,998,183	12.0	9.7
2013	8,760,800.00	916,256	7,239,409	12.7	10.5

Source: Author's calculation according to the Investment-development bank of Republic of Srpska, the Database on the economic indicators, available on http://www.irbrs.net/statistika/Analitika.aspx?tab=4&lang=cir

Even though the agriculture is considered to be an economic branch which contains the most developmental potentials, in generating the total BDP it participates with just 10-11%. It is obvious from the table that the agricultural participation is in the constant decrease during which the negligible recovery is noted in 2013 when compared to previous year.

However, here it should be taken into consideration that in the spring 2014, Semberija and Posavina, where the main part of the fertile land is located, were affected by immemorial floods, so it is expected for this indicator to decrease.

Keeping in mind the significance of this economic branch the leading of the active politics in agriculture started. The special attention is devoted to the construction of the adequate regulatory frame. The Parliament of Republic of Srpska in July, 2006

adopted the Strategy of the Agricultural Development of Republic of Srpska till 2015. (The document is available on www.vladars.net/sr-SP Cyrl/Vlada/Ministarstva/mps/Documents/стратегија развоја пољопривреде РС, entered on 2nd November, 2014).

The strategy includes the following measures:

- The creation of the adequate institutional frame by the reform of the legislation;
- The protective customs policy and the export subvention;
- The stimulation of the agrarian loan market development;
- With the aim of better development monitoring and more adequate support of the agricultural production it is planned to conduct the household registration and classify them to commercial and non-commercial (non-productive). Like this, the establishing of the capacities of these production units is eased. It is expected that, as the time passes the commercial households become the legal persons, and that would enable easier business on the market and easier loan access, and
- The formation of the agrarian budget, from which with the help of the authorized ministry, the assets for the agricultural production subvention would be selected. It is planned for the agrarian budget to be 6% from the domestic budget revenues lasting for first three years of the enforcement, and later to increase to 8%.

Many laws were adopted – the Law on Agriculture (Official Gazette of Republic of Srpska no 76/06, 20/07, 71/09) and the Law on Security and Direction of the Assets for the Development of Agriculture and Village (Official Gazette of Republic of Srpska no 106/09).

From all undertaken measures, the agricultural producers expect the most from the subsidized production.

The assets provided for these intents are used for the interventions and investments in agriculture. Itemized the whole range of intents for the interventions in agriculture and that (the Law on Security and Direction of the Assets for the Development of Agriculture and Village, article 3) where we have various intents from bonuses in the production of the agricultural products, regressions for the semi-finished products supply, the financing of measures for the agricultural advancement, but also for the financing of the expert services, programs and studies.

Investments in agriculture are encouraged by the loan co-financing to the loans approved to the agrarians by the bank (Subić, Vasiljević, Zorica, Mihailović, 2010). They include the regressions for the loans taken for the fixed and current assets in agriculture, for construction financing and reconstruction of the productive and reproductive capacities, amelioration of the laws and pasture, irrigation systems and financing equipment for the repurchased units of the agricultural products (Mihailović, Cvijanović, Cvijanović Gorica, 2014).

The ministry is obliged to pass a Law on the Conditions and the Way of Gaining Financial Stimulus for the development of agriculture and village, which enables the choice of agricultural households and projects which would be financed.

The review of the assets appropriation for the stimulation of the agricultural development is given in the following table.

Table 2. The subvention participation for the development of agriculture and village in total budget expenses in Republic of Srpska (in BAM)

Year	Subvention	Total budget spending	Participation in %
2005	32,969,611.00	945,600,00	3.49
2006	41,058,077.00	1,098,600,00	3.74
2007	71,514,621.00	1,390,000,00	5.14
2008	80,000,000.00	1,500,000,00	5.33
2009	81,562,000.00	1,600,000,00	5.10
2010	80,000,000.00	1,600,000,00	5.00
2011	60,000,000.00	1,600,000,00	3.75
2012	60,000,000.00	1,825,000,00	3.29
2013	60,000,000.00	1,945,000,00	3.08

Source: Author's calculation based on the budget spending

It is obvious that the subvention amount in agriculture since 2010 decreases in relative amounts which can be explained as a consequence of the problem caused by the economic crisis. According to the Law on Security and Direction of the Assets for the Development of Agriculture and Village which was adopted in 2002, it is planned for the subvention amount to reach 4% of the budget expenses, which was achieved and exceeded only in the period from 2007-2010.

After that period the assets' amounts to the subventions decrease more and more in relative indicators, even though they stagnated in the absolute, i.e. they increased.

Even though the material support for the agriculture was directed in three different areas – current subventions, investment programs and rural development, the budget assets were marketed on 47 different positions, it can be concluded that the subvention policy had more social than agrarian component. The comprehensively analysis of the given subventions in Republic of Srpska was never done. According to the authorized ministry, more than a half of the assets for the stimulation of the agricultural development were spent for the direct support of the certain products (milk, seeds, and tobacco). Then, the especially negative fact when it comes to the subvention efficiency is that the significant part of the stimulation was given only to the minority of producers (The Strategy of the Agricultural Development of Republic of Srpska, 78).

The special flaw of these subventions is the nonexistence of the coexistent action and comprehensive subvention analysis, which are given on the different governmental levels. The stimuli which are approved by the local autonomy units are not adjusted in the complete agrarian policy with the expenses of the republican governmental level.

In the end, the fact that Republic of Srpska compensates only 43% of the needs for wheat, 59% for corn, 2.9% for soy, 23.9% for beef, 32.6% for pork, 42.6% for poultry, and 31.2% for milk (The Strategy of the Agricultural Development of Republic of Srpska, 78), only proves the weak agrarian policy and low subvention efficiency.

If we compare the previous two tables, it can be concluded that the expense amount from the republican budget for the help of agriculture and village does not have any significant part for the agricultural production growth. So the gross value added in agriculture increased during 2010 even though, the subvention amount is decreased by 20,000,000.

The agricultural part in the creation of GDP in 2013 increased when compared to 2012 for more than one percentage point, even though the subvention amount stayed has not changed.

The importance of subvention for the development of agriculture and village in Republic Serbia

The Republic of Serbia disposes with 5.1 million ha of the agrarian surface (0.68 ha per inhabitant). According to the list from 2012, the number of members and permanently employed at the agricultural households is 1.44 million, which is about 20% of the population. (The Strategy of the Agricultural and Rural Development of Republic of Serbia for the period from 2014-2024) Republic of Serbia produces surplus in the external exchange of the agricultural products (Mihailović, Cvijanović, Paraušić, Vesna, 2011).

The covering of import by export in the first half of 2014 was 1.8%. (The Ministry of Agriculture and Protection of the Environment of Republic of Serbia www.mpzzs.gov.rs)

Table 3. The agricultural participation in the total Gross domestic product (GDP) and Gross value added (GVA) in Republic Serbia (in billions in RSD)

Year	GDP	GVA in agriculture	in % from the total GVA	GVA in agriculture in % from GDP
2008	2,661,386.70	237,475.00	10.4	8.9
2009	2,720,083.50	218,005.00	9.3	8.0
2010	2,881,891.00	245,128.00	9.9	8.5
2011	3,208,620.20	292,919.00	10.5	9.1
2012	3,348,689.20	279,126.00	9.7	8.3
2013	3,618,167.20	344,320.00	11.4	9.5

Source: The Strategy of the agricultural and rural development of Republic of Serbia for the period from 2014-2024 Official Gazette of Republic of Serbia no 85/2014

Based on the data in the table, it can be seen that the agriculture takes part in creation the gross value added which goes from 9.3-11%. However, it is difficult to estimate

if these changes are the result of the state in agriculture or changes in other sectors (Paraušić Vesna, Cvijanović, Vuković, 2013).

It is a general opinion that the current state in agriculture of Republic of Serbia, their potentials and limits, still show the trend of lower necessary investment, which results in a consequence to get less than possible. (Kosanović, Pejanović, 2010)

No matter of the unused potentials of this economy branch, Serbia has a significant regulatory frame which covers this area. Agriculture is, as a developing potential, recognized in the range of strategic documents. Here it is stated The Strategy of the Agricultural Development of Republic of Serbia (Official Gazette RS no 78/05), The National Program for Agriculture of Republic of Serbia from 2010 to 2013 (Official Gazette RS no 83/10), The National Program of Rural Development from 2011 to 2013 (Official Gazette RS no 15/11) and the Strategy of the Agricultural and Rural Development of Republic of Serbia for the period from 2014-2020.

Based on these strategic documents, the Law on Agriculture and Rural Development was passed (Official Gazette RS no 41/09 and 10/13) and the measures of the agrarian policy. Here we add the (Milovanović 2011) the direct stimuli i.e. measures which influence the market directly, as well as the market support, institutional support and structural support.

The main source of investments in agriculture originates from the agrarian budget which, to people who live in the countryside and those who live from this production, is of the specific significance keeping in mind that nowadays there is no agricultural producer who can survive without the protection and subvention of the state (Simonović, Mihailović, Simonović, 2010).

The main characteristic of the agrarian policy of Republic of Serbia typical for the period from 2000 is its unpredictability. Three phases are characteristic. First phase (2000-2003) is oriented toward the measures of the price support for certain plants (soy, sunflower, sugar beet, wheat) with the absence of other measures of the agrarian policy.

Second phase (2004-2006) is characterized by the abolishment of the price support and it proceeds to the support of the investments and rural development and from 2004 the registration household system was introduced, as a pre-condition for the usage of the budget support for the agriculture. The conditions for listing in the register, and the accomplishment of this right have been changed several times.

Third phase (2007-2009) is characteristic by setting the payments according to surfaces and head of cattle with the part in total agrarian budget which goes over 50%. However, the structure of the assets for the input subvention had been changing dynamically, with the tendency of concentration to the support for diesel fuel and the usage of mineral compost.

The Government of Republic of Serbia passed the Regulation on Division of Stimuli in Agriculture and Rural Development in 2014 published in Official Gazette RS no 8/14 since 29th January, 2014.

The assets from the Article 2 of this regulation are disposed for the following types of stimuli: direct payments, stimuli for the measures of rural development, special stimuli.

The amounts of the assets to subventions and their participation in the total expenses of the budget of Republic of Serbia are given in the following table.

Table 4. Subvention participation for the development of agriculture and village in total budget expenses in Republic of Serbia (mill. RSD)

Year	Subvention	Budget Expenses	Participation in %
2005	8,961.20	438,803.20	2.04
2006	11,180.70	529,707.50	2.11
2007	12,754.30	617,625.30	2.07
2008	25,309.90	702,068.30	3.61
2009	16,694.30	746,452.00	2.24
2010	22,863.90	812,473.60	2.81
2011	18,020.10	877,295.10	2.05
2012	29,647.10	980,381.60	3.02
2013	29,866.00	985,749.50	3.03

Source: Author's calculations based on the data on the website of the Ministry of Finance of Republic of Serbia, the Bulletin of Public Finances no 120, August, 2014. Available on the page http://www.mfin.gov.rs/UserFiles/File/bilten%20javne%20finansije/bilten-120-web.pdf entered on the 2nd December, 2014.

From the data it can be seen that the biggest budget expenses for subventions from Republican budget were in 2008, when it starts decreasing suddenly. This is a consequence of total economic movements keeping in mind that 2008 and 2009 are the years when the first effects of the economic crisis could be felt. The sharp rise by one percent in total expenses is noted in 2012, and that trend continued in 2013. However, comparing the data from the attached tables there is no clear connection between subventions and newly added value in the observed years. It can be concluded that subventions, even though they are unfortunately inevitable profitability factor in agricultural production of Serbia, they are not of crucial importance for the enhancement of the agricultural role in the total production. It seems that the total role of the agricultural production more depends on the growth of other sectors than on the potential exploitation in the very agriculture.

Results and discussion

The contribution of agriculture to gross value added in Republic of Srpska in the observed period is constantly decreasing. It ranges from 13.9 to 12%. Even though in 2013 it was higher than in 2012, in 2014 the additional fall is expected, keeping in mind

that the regions of Semberija and Posavina were affected by great floods.[4]

Even though the agricultural land is considered to be one of the most important resources of Srpska, and that over 57% of the population lives in and from the countryside, the availability of the agricultural surfaces is estimated to be around 0.952 ha per inhabitant, the agricultural production covers just a small part of the needs for the agricultural products. The cover of the import by export is just 87%.

There is no clear correlation between the subvention volume from the republican budget and revenues to the newly accomplished value. The share of subsidies in total budget expenditures ranges from 3.49 to 5%. Subvention assets, in the observed period had more the form of the social support to the agricultural producers and village, than they had the character of the aimed influence to the development of this economy branch.

Even though the subvention policy declaratively refers to the interventions and investments in production, the assets are mainly directed to the development of the certain products.

Republic of Serbia also disposes with great agricultural surfaces; the availability of the agricultural surfaces is 0.68 ha per inhabitant. More than 50% of the total population lives in the countryside, while only 20% of them actively deal with agriculture.

The contribution of the agricultural production to the gross value added in Republic of Serbia in the observed period goes in the interval from 8.0-9.5%. The noticed oscillations are more the result of changes in other sectors than the changes in agricultural production.

Republic of Serbia produces surplus in the external exchange of the agricultural products, the cover of import by export in the first half of 2014 was 1.8%.

The total subvention amount in the observed period was between 2.04-3.61%. However, there is no clear correlation between the volume of the newly achieved value in agriculture and subvention amount. The highest value added from 9.1% was in 2011, and the subvention amount was among the lowest in the observed period 2.05% expenditure if the republican budget.[5]

Even though the production would be unprofitable without subventions, the general opinion is that the budget support to the agriculture of Serbia is insufficient and that it significantly lags behind other countries. Besides that, the frequent change of policy of subvention assignment is noticed, which additionally affects the uncertainness of the long-term investments in this sector.

The trend of unfavorable movements in agriculture of Republic of Serbia will probably be continued in the following 2015 having on mind the annunciations Assembly

4 At the time of writing this paper, date for 2014 were not published.

5 It should keep in mind that in the work only expenses from the Republican budget are analyzed, not the expenses of the lower authority levels

Board of Serbia for agriculture that agriculture will gain 4.06 billion dinars less by the rebalance of budget for 2014.

Conclusion

Comparing those two countries it can be concluded that even though the availability of the agricultural land is bigger and the percentage of the employed in Srpska is higher than in Serbia, Republic of Serbia achieves export expenses which bring the conclusion on the greater productivity. However, from the budget of Republic of Srpska for the agricultural production is abstracted more in percentage, the gross value added to the total gross-social product is also bigger.

Then, in none of the countries there is clear tendency of the subvention movements in agriculture. The impression is gained that the direction of the agricultural production is the result before the current oscillations in the budget revenues than the result of the long-term and permanent strategy of the agrarian development.

Also, none of the other countries conducts the adequate analysis of the subvention users, i.e. the effect of assets spending for these intentions, which additionally complicates the long-term leading of the stable expenses policy.

Both observed countries should, based on the strategy which they had already adopted and the legal solutions which are set relatively well, conduct more intense and stable policy of the budget expenses for these intentions, keeping in mind that in both of them the agriculture was identified as a significant production branch with the high developmental potential.

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ANALIZA SUBVENCIJA ZA POLJOPRIVREDU U REPUBLICI SRBIJI I REPUBLICI SRPSKOJ

Ljiljana Jović[6], Nada Kosanović[7], Predrag Vukadinović[8]

Rezime

U radu se vrši komparativna analiza subvencija za poljoprivredu i ruralni razvoj iz republičkog budžeta Republike Srbije i Republike Srpske. Na osnovu analize bruto dodate vrednosti i iznosa subvencija u periodu 2008-2013. zaključeno je da ni u jednoj zemlji nema uzročno-posledične veze između obima subvencija i bruto-dodate vrednosti što *ukazuje na neadekvatnu politiku podsticaja.*

Pored toga, uočeno je da nema jasnog trenda u visini izdvajanja sredstava kao i strukturi korisnika subvencija što *upućuje da politika podsticanja poljoprivrede i sela ni u jednoj zemlji, nema obeležje dugoročno razrađenih ciljeva, nego je više proizvod trenutnih kretanja u javnim prihodima, odnosno kratkoročno definisanih političko-ekonomskih prioriteta.*

Ključne reči : *Poljoprivreda, subvencije, Republika Srbija, Republika Srpska*

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KEY PRINCIPLES OF RURAL TOURISM HOUSEHOLDS DEVELOPMENT STRATEGY - CASE STUDY OF VOJVODINA

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Summary

The subject of the paper is the analysis of the condition and perspectives of the development of rural tourism in households of Vojvodina. Vojvodina with its natural and social resources qualifies for a position within the developed rural tourism regions. However, rural tourism product in Vojvodina has not been holding an appropriate position at the market. For the aim of determining principles and factors for successful rural tourism, questionnaire has been formed, which has been conducted among 70 country households involved in tourism. In order to achieve the best possible position at the international market, Vojvodina needs to apply the model of development that would ensure competitive advantage regarding similar destinations. Essential activities for improving service quality in rural tourism are: to improve the quality of accommodation facilities, to educate population with the aim of achieving higher service quality, to establish and apply criteria for standardization and service quality in rural tourism in Vojvodina and to intensify promotion at domestic and international market.

Key words: *sustainability, rural tourism, households, development strategy, Vojvodina*

JEL: *Q01, D10*

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Introduction

The process of transition, the poor economic situation and series of circumstances in the last two decades have had a negative impact on the physical, social and economic development of rural areas of the Republic of Serbia, i.e. Vojvodina. Vojvodina is autonomous province in Serbia, which occupies the northernmost part of Serbia. Out of 465 inhabited places in the Autonomous Province of Vojvodina in total, 415 are rural settlements. An average Vojvodina rural settlement has around 2,200 inhabitants and 22.94% of them are older than 60. A worrying fact is that 87% of 415 settlements in total record have a negative birth rate (it is negative in 38 out of 45 municipalities in total). There were almost 95,000 rural inhabitants fewer in the province in 2011 than in 2002 and more than 100,000 inhabitants fewer than two decades ago (Rodić et al., 2013). The functional focus of most rural areas indicates a significant orientation towards agricultural production.

In rural settlements, agriculture is still the basic economic activity and the main source of revenues. However, it is characterized by low productivity and competitiveness, a high level of extensive production with low revenues per household. In addition to low revenues of agricultural producers, foreign direct investments in agriculture make below 1% of the total (Andrić et al., 2010). The share of agricultural population in the total population of Vojvodina is below 11%. Per 1 inhabitant there is 0.88 ha of agricultural land. Having in mind that the average farm size is about 3.59 ha of used arable land and that each farm has about 3 separate parcels, it could be concluded that Vojvodina has a very unfavourable property structure (Novković et al., 2013). Significant characteristics of rural areas in Vojvodina also include a low level of diversification of economic activities and high unemployment rate (over 20%) (Pejanović, 2010; Rodić et al., 2013) so the rural population is facing the problem of poverty.

The least diversified revenues have households in Vojvodina, which are more than others dependant on agricultural income and therefore more dependent on the position of agriculture. These parameters indicate that depopulation of villages in these regions is a significant generator of their poverty (Cvejić et al., 2010). With about 12% of people aged 65 and older or about 20% of people older than 60, Vojvodina is in an advanced stage of demographic aging (Pejanović, 2010). In just ten years (2002 - 2011), the population in Vojvodina has become almost 2 years older (Rodić et al., 2013), but aging is a problem which exists also in many developed countries, especially the EU (Goll, 2010; Burholt, Dobbs, 2012).

Faster development of Vojvodina's agriculture lies in the multi-functional development. One part of the agricultural resources could be used in conventional manner and a part of the resources could be used for non-agricultural purposes (agro-eco tourism, hunting, fishing and sports tourism and catering and the production of renewable energy).

Theoretical framework: terms and concept of rural tourism

There is no commonly accepted definition of rural tourism since different countries

have different criteria for defining rural area. Rural tourism has a plethora of definitions, from the very minimalist one: "any tourism activity that takes place in rural areas" (Commission of the European Communities, 1986), to more elaborate ones such as the definition by Lane (1994) who defined rural tourism as a discrete activity with distinct characteristics which may vary in intensity, and by area.

Tourism has long been considered as a potential means for socio-economic development and regeneration of rural areas, in particular those affected by the decline of traditional agrarian activities (Iorio, Corsal 2010). Concurrently, a number of factors has supported the generation of a demand for rural tourism. An increased longing for the countryside as a result of the pressures of modern urban life, a booming natural food market, and a desire to conserve traditional rural life are among the factors that supported the generation of this demand (Ertuna, Kirbas, 2012).

Numerous studies deal with the different benefits derived from rural tourism that can be used as potential solutions to many of the problems facing rural areas (Hegarty, Przezborska, 2005; Wilson et al, 2001; Nel, Binns, 2002). These benefits are:

1. economic growth: diversification and stabilization through employment creation, improvement of rural income and creating a flourishing rural economy which in turn intensify the competition between local industry players and their international rivals (Liu, 2002; Schubert et al., 2011);
2. socio-cultural development: the revitalization of local crafts, customs and cultural identities; to promote interactions among urban dwellers, rural villagers and the rural areas;
3. environmental function: to improve and upgrade the quality of the rural environment, as well as to protect its natural landscape and eco-systems (Liu, 2002).

Rural tourism in Vojvodina

The development of tourism activities in the villages of Voivodina has a long tradition, as organized tourist traffic in this region began to take place from the late 70's of the last century. In the tourism development strategy of Serbia (for the period 2005-2015, adopted in 2006.) rural tourism is recognized as one of six key tourism products of Vojvodina. However, it was concluded that despite good resource potential of rural tourism is not adequately structured and organized, and it should take the necessary actions in order to create a rural development process.

Since 2006, Ministry of Agriculture, Forestry and Water Management of Republic of Serbia have financially supported and encouraged the development of tourism and the diversification and expansion and improvement of economic activities in rural areas. As far as the purposes for which the Ministry granted funds are concerned, the majority of funds in Vojvodina have been invested in the restoration of traditional rural households in the function of rural tourism (renovation, construction, renovation, purchase, etc.) (Bošković et al., 2013).

Products in rural tourism in Vojvodina are represented by the offer of the farms, tourist villages, ethno-houses, rural architecture and rural manifestations, i.e. all services which are offered to tourists, such as room and board, sightseeing of the destination, participating in work of a country host, organizing creative workshops etc.

1. Farms are a specific form of traditional agricultural households, and it makes a particular segment of rural tourism. Although after the Second World War thousands of farms were demolished, several have been turned into tourist sites (Košić, 2012).

2. Tourist villages. The villages, in addition to their basic residential function with agricultural, they gain also recreational tourist function (Čomić, 2001). Rural tourism should contribute to the preservation of the rural environment and cultural heritage, but also to provide economic motivation for local population to stay there and to get engaged in traditional crafts among others.

3. *Country architecture.* Old farmhouses represent one of the most impressive forms of material folklore creativity of Vojvodina. The original houses were built of mud and covered with reeds, according to the colonial model. In time they gain a number of other details typical only for these parts of the Pannonian Plain. (Stojanović, 2000; Vasić, Turnšek, 2004).

4. *Ethno houses*. Ethno-house is the house with the overall economy, which is built in the traditional style of folk architecture of Serbian, Slovakian, Romanian, Croatian and other nationalities in Serbia. According to Deacon and others (2004), ethno-houses contribute to the preservation of material and non-material traces of local culture, but are also indicator of the struggle of the local community and culture with the accelerated process of globalization.

5. *Rural tourism events.* The event organizers have different professional staff, logistical support and financial opportunities. This influences the content, the amount and quality of events, regardless of their importance. On the other hand, the organizers insufficiently involved in the market research, or they are not involved at all in testing of desires and expectations of potential tourists, but they are more concerned with solving the problem of acquiring donors and sponsors for the events.

On one side, the development of rural tourism in Vojvodina can play an important role in increasing the variety of tourist offers in entire Serbia and formation of one richer and picturesque image of the country. On the other side, tourism in villages and on farms should not only be the goal, but also the means for inducing the economical growth, strengthening undeveloped regions and improving the life standards of local population. With the development of tourism in those regions there is the occurrence of multifunctional agriculture which gives to people on the farms and in villages additional possibilities for economical strengthening.

Methodology framework

Research methods used in the work are the following:

1. *The method of analytical study* of all factors affecting the development of rural tourism in Vojvodina, in places that already have a pre-condition for the development of rural tourism, as well as identifying potential rural tourism units;
2. *In the field studies* have been applied methods of observation and survey of household owners. In the study of archives and other historical documents important for understanding of the development of rural tourism, statistics and research results of related topics abroad historical method was used;
3. The *synthesis reasoning* brought to the conclusion about the importance of certain rural units, assess of the current situation and pointing out the possibility of further development;
4. Conclusions about the collected material were presented through *descriptive methods.*

Research of rural tourist households in Vojvodina was conducted in order to:

1. identify services and products offered in rural tourism,
2. determine attitudes of their owners about the inclusion in the tourism offer,
3. consider tourist activities of every household,
4. identify the most common forms of promotion.

The instrument used for the study was a questionnaire that was formed by the authors. The questionnaire consisted of 45 questions, divided into three parts:

1. Basic information about the farm (name and surname of the owner, location of the household, categorization, the year of establishment, number of members of household engaged in rural tourism, membership in an association of rural households);
2. Tourist offer of the household (which products are offered to visitors, the structure of visitors to whom the tourist product is intended, signalization to the household, etc.).
3. Marketing (cooperation of rural household with travel agencies, the scope of promotion of rural households through travel organizations, types of promotion of rural tourism) and tourist traffic (number of visitors, the age structure of guests, structure of guests according to the place they come from, the average length of stay of guests).

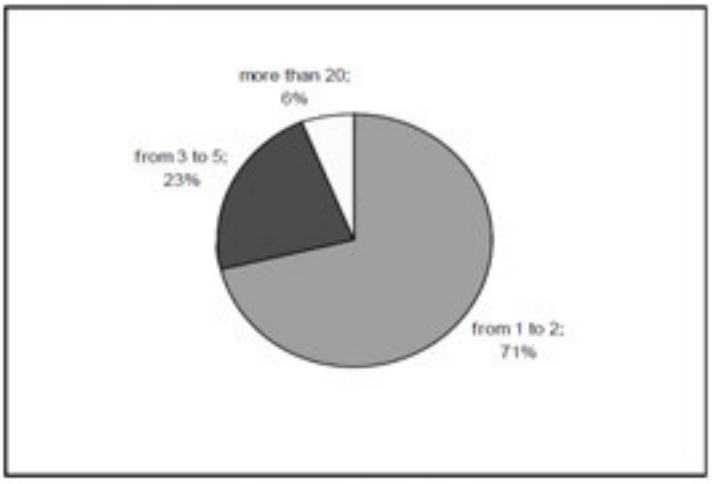
The research was performed individually. The authors conducted a survey of owners of 70 rural households, farms, ethno-houses in Vojvodina. Rural households that were included in the survey are located in Kovačica, Bački Petrovac, Skorenovac, Bački Monoštor and Jazak. Data were collected from March 2014 until October 2014.

Findings and discussion

The survey of rural households, farms and ethno-houses showed that those are all small family properties, which mostly employ 1-2 members of households (Graph 1), while exceptions are large farms, which have a well-developed tourist offer, and consequently, the need for more labour (for example, Farm "137" which has 35 employees).

The primary activity in most of the households surveyed is agriculture (59%), and additional tourism, a small number of them are primarily engaged in tourism (41%). Research has shown that a large number of facilities in rural tourism started business between 2003, and 2008. (87%), while only 8 enterprises (13%) started with rural tourism between 1992. and 2003. The conclusion could be drawn from this, that the rural tourism in Vojvodina is in its infancy, but that every year there are more and more interested people to deal with this form of tourism.

Graph 1. Number of employees in rural households (in %)



Source: Authors' calculation based on the survey data

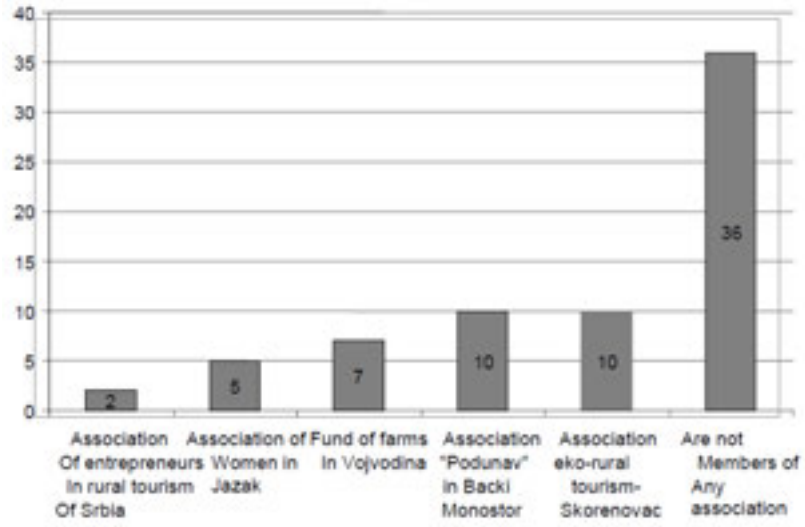
Most of the facilities are privately owned (97%). Regarding the work of the researched facilities, 54 facilities (77%) provide services throughout the entire year, while 16 facilities (23%) have either seasonal work, or by appointment.

A greater number of respondent hosts, 36 of them, are not members of any association of entrepreneurs in rural tourism (Graph 2). Others are members of one of the following associations: Association of Entrepreneurs in Rural Tourism in Serbia, Association of Women in Jazak, Fund of farms in Vojvodina, Association "Danube" in Bački Monoštor, and Association in eco-rural tourism (Skorenovac).

Regarding categorization, a large number of households do not have elaborated categorization. As many as 38 surveyed households were not categorized, 12 are in the process of categorizing, and 20 households received categorization. Most households have the 2nd category (3 stars). Many households have problems with categorization

because regulations on categorization are not adjusted for facilities of original architecture. Some households are waiting for the process of categorization, because at the municipal level there is no commission for categorization.

Graph 2. Are you a member of any association of rural households?



Source: Authors' calculation based on the survey data

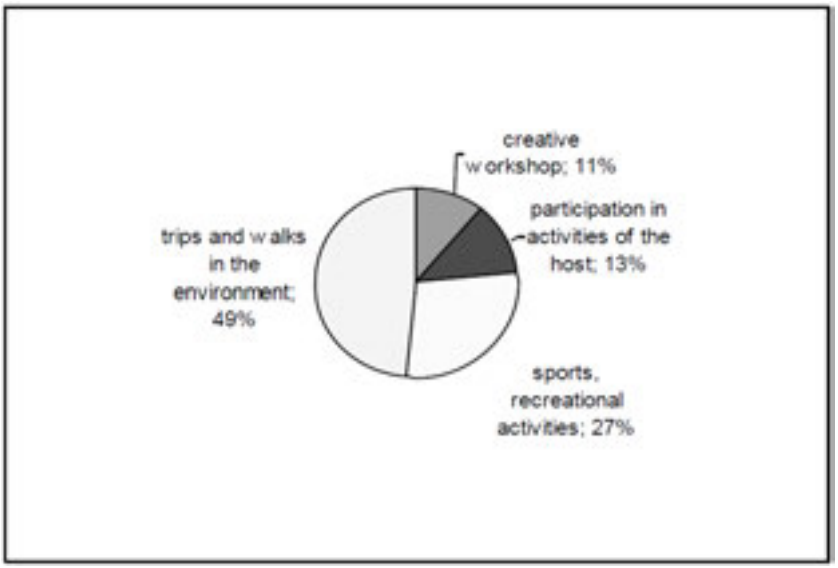
The second part of the questionnaire was aimed at determining the quality of tourist offer of the household. Concerning the type of tourist offer, room and board in its offer have 48 homesteads, while only food services have 22 homesteads. Except for the difference in the capacity of lodging, homesteads also differ in the quality of the offer. Concerning the capacity, affirmed farms and rural homesteads have large number of beds, compared to some rural homesteads, where only one or two rooms are in the offer. In some private rural farmsteads, in every room there is separated bathroom, while in some there two or three rooms share one bathroom. In 42 facilities homemade food produced in the homestead is on the menu, while in 28 facilities food and drink are purchased, mainly from individual domestic manufacturers. Bigger farms, which have already been commercialized, acquire homemade food and drink, but they do not produce them in the facility itself. In most households, the main local products are homemade juices, brandy and pickles. To the question: "Is it possible to buy food in the household, for tourists to take home?" 18 respondents said yes, while 52 households do not have that possibility to offer.

Concerning the structure of visitors, the largest number of respondents (68%) answered that tourist product of homestead is meant for all structures of visitors, 9% of facilities is firstly aimed for school children, while 23% are aimed for the others (youth, families, older people, business people). During the stay in rural homesteads, on the farms and in ethno-houses, there is a possibility to practice a wide range of activities. The question

was: "Which activities are offered to guests during their stay?" (Graph 3), the most often are present excursion trips and walks in the surrounding area. All rural homesteads usually offer walks and bicycle riding, and those homesteads which have aimed their services mainly at school children offer also seeing domestic animals.

As for the plans for the expansion or construction of new facilities in rural households, the households that currently do not have accommodation facilities are planning to build it in the next period. Many households plan to complete the sports and recreational facilities (construction of a golf course, tennis courts, buying a bike for rent, children's playground, and swimming pool) and thereby enrich the tourist offer. About 20% of households do not plan to build anything in the future.

Graph 3: Representation of activities during the stay in the household



Source: Authors' calculation based on the survey data

In the third part of the questionnaire marketing was researched, in order to see what kind of cooperation is between rural households and travel agencies, the scope of promotion of rural households individually or through tourist organizations, types of promotion of rural tourism.

Many rural households have an information board just in front of the household, because they have not yet been categorized, so they do not want to be labelled until the categorization is done. Some households do not have any guideline to the facility because they do not receive visitors without notice, and are of opinion that their signalling is not required. Regarding the use of the Internet for promotion, only 23% of households have both web site and e-mail.

Most households have a cooperation with tourist organizations of municipality to which they belong and the Tourist Organization of Vojvodina, and the lowest with the Tourist

Organization of Serbia. Of all respondents, 17% have cooperation with the Tourist organization of their municipality and with the Tourist organization of Vojvodina, and the Tourist Organization of Serbia. Cooperation with the Tourist Organization of the Municipality and the Tourist Organization of Vojvodina has the largest percentage of respondents, 41%. Only cooperation with the Tourist Organization of their municipality has 15% of respondents, while the remaining 15% do not cooperate with ant tourist organization.

Rural households sell their services either independently (34%), or through travel agencies (66%). One part of rural households cooperates with travel agencies in Serbia and abroad (Hungary and Croatia). In some tourist packages only 25% of rural households are included. Very few households have their own brochure (15%), and at fairs they rarely appear independently, but under the aegis of the Tourist organization of Vojvodina and Serbia. A small number of rural households are advertised through the media (radio, TV and newspapers).

The volume of tourist traffic is very different from household to household. Comparison is difficult to make, because many households do not keep records of transactions regularly, but on a quarter or annual basis. Some households keep record of the number of nights, and those that do not have accommodation track the number of visitors. Regarding the structure of guests according to the place they come from, the highest percentage of guests is of domestic origin, while on average 20% is of foreign origin. The average length of stay of guests is: in 41% of facilities visitors remain 1 day, in 42% of facilities the average length of stay is 2 days, while in only 10% of facilities tourists stay 3 days or more.

Key principles of the strategy of development of rural tourism households in Vojvodina

To make the best use of the advantages of rural tourism in Vojvodina, and overcome lacks it is necessary to undertake a number of measures. The key principles of the strategy of tourism development of rural tourism households in Vojvodina, which have already confirmed as a factor of success in the case of similar tourist destinations in Europe include:

1. ***Tourist offer must be meaningful.*** Rural tourism offer of Vojvodina should be diverse, rich and adapted to different segments of tourists. Substantiality of the offer must be visible in space and time. For example, any time of year can have its offer, recognizable and characteristic by the way of life and rural work relating to that period.
2. ***Environmental sustainability.*** The pursuit of sustainable development of rural tourism means that visitors/tourists participate actively in the whole process, in order of conformity of their overall behaviour to the objectives of development, primarily for the protection and preservation of the natural environment and cultural and historical heritage.

3. ***Rural tourism must be based on the study and understanding of tourist needs.*** It is necessary for the development of tourist product to be driven by demand first, and not by the product itself. This means identifying different categories of potential visitors in key markets. Each of these categories of visitors has different motivations and therefore for each of these segments there will be a demand to determine different products of rural tourism and different experiences.

4. ***An effective marketing.*** In order to make the marketing performance of rural tourism destinations in Vojvodina better, except for private initiative, it is necessary to engage local communities and tourist organizations of municipalities. In order to achieve that, it is necessary to publish specialized brochures, make films, multimedia presentations, and make a unique web portal which would include data on all registered service providers in rural tourism of Vojvodina. Also, it is necessary to teach the hosts to use the Internet, so that they could promote the tourist product easier.

5. ***Providing financial assistance and giving incentives for the development of rural tourism in Vojvodina.*** Without financial support from the state the development of rural tourism in Vojvodina can not be successfully carried out. Support for rural tourism is manifested in the form of direct support (aid, grants, and loans) or in direct support of investment (share of equity). For the development of rural tourism in Vojvodina it is very important to include the Ministry of Agriculture and other organizations that would help financially the development of rural tourism. International agencies, including the European Union and the United Nations Development Programme (UNDP), can help in the development of rural tourism through a range of support, both technical and financial, that the agencies could give to governments and regional authorities.

6. ***Coordination and cooperation.*** It is necessary to coordinate activities between the various entities involved in tourism development. It is necessary to encourage the cooperation of rural households by strengthening existing and establishing new associations.

7. ***Education and training.*** A special aspect of the management of the development of rural tourism in Vojvodina is manifested in the need for education of staff. Training for work in rural tourism should apply to all persons who would be involved in the rural tourism, and in: program planning, service delivery, direct contact with tourists, as well to all persons and institutions that are generally concerned or should take care of tourist development of the area. The ultimate goal of all training (seminars, workshops, etc.) should be that all potential participants from local authorities to the village housewives, understand values which the development of rural tourism could have for their region. All that for the purpose of conscious development of rural tourism, which should not be uncontrolled, unplanned or sporadic, but planned, controlled and sustained.

8. ***Standardization and categorization.*** For further tourism development in the countryside it is necessary to apply the appropriate standardization and categorization of services, especially appropriate conditions for accommodation. Rural tourism products will need to be developed to the highest standard to meet the needs of the consumer and to encourage their next arrival, which is important for ensuring long-term sustainability. Labelling i.e. providing labels can be used as a guarantee of quality.

Conclusion

Vojvodina with its natural and social resources qualifies for a position within the developed rural tourism regions. There are villages, farmhouses, ethno houses and events in Vojvodina that could offer authentic experience. However, rural tourism product in Vojvodina has not been holding an appropriate position at the market.

Certain measures have to be taken in order to exploit the advantages and potentials and at the same time overcome disadvantages and restrictions of rural tourism in Vojvodina. The essential activities for improving service quality in rural tourism are: to improve the quality of accommodation facilities; to educate population with the aim of achieving higher service quality; to categorize accommodation capacities in rural tourism in Vojvodina; to establish and apply criteria for standardization and service quality in rural tourism in Vojvodina and to intensify promotion at domestic and international market.

It is necessary to highlight that the development of rural tourism households in Vojvodina, which complies with reasonable possibilities, would approach certain obstacles and face difficulties. In order to achieve the best possible position at the international market, Vojvodina needs to apply the model of development that would ensure competitive advantage regarding similar destinations.

Indisputably, Vojvodina has a high potential in rural tourism that makes a fundamental component in the complex development of tourism in Serbia. However, the development is primarily dependent upon the tourism offer variety and the presentation in its widest sense.

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KLJUČNI PRINCIPI STRATEGIJE RAZVOJA TURIZMA NA SEOSKIM GAZDINSTVIMA – STUDIJA SLUČAJA VOJVODINE

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Rezime

Predmet rada je analiza stanja i perspektiva razvoja ruralnog turizma na seoskim gazdinstvima u Vojvodini. Vojvodina sa svojim prirodnim i društvenim resursima ima osnovu za razvoj ruralnog turizma. Međutim, proizvod ruralnog turizma u Vojvodini nema odgovarajuću poziciju na tržištu. Sa ciljem utvrđivanja principa i faktora za uspešan razvoj ruralnog turizma, formiran je upitnik, a istraživanje je sprovedeno na 70 seoskih gazdinstava koja se bave turizmom. Da bi se postigla najbolja moguća pozicija na međunarodnom tržištu, Vojvodina mora da primeni model razvoja koji bi osigurao konkurentsku prednost, oslanjajući se na iskustva sličnih destinacija. Važne aktivnosti koje će doprineti poboljšanju kvaliteta usluga u ruralnom turizmu su: poboljšanje kvaliteta smeštajnih kapaciteta, edukacija stanovništva sa ciljem postizanja višeg kvaliteta usluga, uspostavljanje i primena kriterijuma za standardizaciju i kvalitet usluga u seoskom turizmu u Vojvodini i intenziviranje promocije na domaćem i međunarodnom tržištu.

Ključne reči: *održivi razvoj, ruralni turizam, seoska gazdinstva, strategija razvoja, Vojvodina*

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ACCESS TO FINANCE FOR ORGANIC PRODUCERS IN SERBIA: DEMAND SIDE [1]

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Summary

The aim of this paper is to identify the problems faced by organic producers when trying to access finance in Serbia. Previous research and experience show that demand for financial services in the segment of organic producers is higher than the supply, and that neither commercial banks nor other financial institutions are willing or able to meet financial needs within the value chain. Due to such situation, agricultural producers are stuck in the "missing middle" segment which lacks funding sources. This study uses questionnaires designed specifically to obtain farm-level data in order to evaluate the shortcomings of the farm credit system. The study shows that access to finance is one of the biggest constraints faced by organic producers and that the existing mechanisms for agricultural funding are not adequate.

Key words: *Access to finance, organic production, bank loan.*

JEL: *G21, O13, Q14*

Introduction

In recent years, organic food has gained an increasing popularity worldwide and the demand for organic goods has never been higher. Following this trend, the cultivated land area under the organic production is growing on an annual basis. However, in Serbia and in the rest of the world, organic land still presents a small part of the total agricultural fertile land. On a global scale, organic production is interesting and important because it protects natural resources from pollution and preserves biodiversity. Also,

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it provides long-term maintenance and enhancement of soil fertility. At the country level, it can ensure sustainable socio-economic rural development. For producers it is more cost effective to produce this type of products, because, despite lower yields, the margins are higher, and in addition they preserve the soil (Crowder, Reganold, 2015). At the consumer level, organic production provides safety.

As the consumption of organic food is growing, the current supply cannot meet the growing demand. Developing and transitional countries with optimal environmental conditions in rural areas have the opportunity to increase their supply of organic products on international market and thus boost profit without compromising the environment with dirty technologies, typical of these countries. However, access to finance and lack of affordable credit facilities represent a significant constraint to the further growth and sustainability of this sector (Jovanović, Despotović, 2012).

Theoretical background

Access to finance or availability of financial resources is one of the most important issues in the financial markets and the economy. Access to finance can be defined as the ability of individuals or companies to obtain financial resources and services. However, distinction has to be made between actual use of financial services and access to finance. Sometimes, individuals or companies simply do not approach the formal financial system because they have no need for it or do not wish to use its services. This is called voluntary exclusion from the formal financial system. The reasons for voluntary exclusion are different and include the habit of trading in cash, lack of interest in further investments or own funds sufficient to self-finance the projects. Involuntary exclusion from the formal financial system occurs when a person or a company wishes and needs to approach the system, but has no access to it due to a variety of reasons. The most common reasons are insufficient income, the lack of collateral or data from the credit registry, as well as high interest rates or risks (Ljumović et al., 2015).

Farmers are faced with the specific problems that could be grouped into three categories: seasonality, weather and environmental risks and market. Due to seasonality, organic produces are faced with challenges in managing their liquidity. Slow rotation of invested capital and irregular cash flow lead to irregular payment to creditors. Output and profitability of organic producers depend on the external risks – related to weather and environment, but above all on the temperature, variable rainfall, pests and diseases. Market challenges include price fluctuations or limited sale. Organic producers can have limited impact on some of these problems, but almost none of them can be controlled.

The agriculture in Serbia has favorable conditions for the development and represents an important factor in total national economy. Rural areas occupy large percentage of the territory of Serbia and are still characterized by a preserved natural environment and good conditions for the organization of crop and livestock production (Paraušić, Cvijanović, 2014). It is estimated that there are almost 230,000 ha of organic land in Serbia, where 96% is used for wild collection, primarily for harvesting berries,

mushrooms and medicine herbs. The GTZ survey data show that the current organic production (until September 2013) was organized on around 7500 ha, including both areas under organic production and under conversion (National Association Serbia Organica, 2014). Currently, there are about 140 agriculture households involved in organic production, but more than 60% of them have less than 6 ha of land and 25% of them have 10-20 ha of land. Permanent crops are the most important, occupying almost 5000 ha, and are followed by permanent grassland (2500ha) and arable crops (1250ha). The sector of organic production is small, domestic-oriented, with rare or no connections between households, processors and other stakeholders. Cooperation between actors in the value chain is insufficient. However, the sector of organic production has been developing slowly, reporting each year an increasing number of farmers who are converting the land and joining the national system of organic production. The research related to the profile of organic consumers has identified high-frequency consumers who are expected to raise the demand for these products (Đokić et al., 2014).

Literature review and hypotheses development

Access to finance in the agriculture and organic production is identified as a limiting factor for development both in terms of fixed and variable inputs (Ciaian et al., 2012; Blancard *et al*., 2006; Gjosheva-Kovachevikj et al., 2013). If farm access to finance is limited, farms' input choices, productivity, and input use are constrained (Ciaian, Swinnen, 2009). Literature on access to finance in the agriculture and organic production in transitional countries is mainly focused on the supply side of the problem, usually including banks and microfinance institutions. Development organizations (USAID, EBRD, OECD) are mainly dealing with the constraints and statistics, while researchers are focused on the relationship between credit supply and farm productivity, farm inputs and outputs, investments and other aspects of rural development (for details see Swinnen, Gow, 1999; Swinnen, 2007; Latruffe, 2005; Latruffe et al., 2010). It is reasonable to expect that almost all studies have found positive relationship between an increased access to finance and improvement of analyzed parameters.

In the developed markets, farms can use different commercial financial sources (own resources, family and friends, foreign partners and integrators, bank loans, venture capital), but also various government development programs and grants or schemes of international institutions. Even though, at first glance, it seems that there are many financial institutions that provide financial resources in Serbia (the number of financial institutions offering credits, as compared to population and the number of enterprises, is relatively higher), the problem of access to finance is particularly evident in the segment of small and medium-sized enterprises and entrepreneurs (USAID, 2012; OECD, 2013). Access to finance in the agriculture and organic production is even more challenging than in the traditional business and is especially pronounced in countries with underdeveloped financial systems that do not have diverse financial institutions and do not provide a wide range of financial services.

Banks in Serbia are the main source of credits for agriculture and organic producers. However, compared to other sectors, banks in Serbia invest only 3% of their total loan portfolio in the agriculture (USAID, 2013). They provide finance to agriculture at the level lower than it would be anticipated, judging by the importance of this sector to the country's economy and GDP (Jolović et al., 2014). Formally, banks offer a wide-range of products to the agricultural sector - ranging from fertilizer/seed input financing, working capital loan, long-term investment financing (financing of agricultural processing equipment) and trade finance to special purpose loans, such as financial consolidation loans. However, all of these products are, generally, available only to big agricultural companies, but not to small farmers. Banks operating in Serbia are usually not suited to serve farmers due to the lack of knowledge in the agricultural sector and the lack of risk assessment capacity. Farmers and organic producers are often classified as high-risk clients and thus the interest rates are unfavorably high. Repayment terms are often mismanaged with farmers' cash flows, loan maturity is predominantly 2-3 years, while the grace period is often too long, making the credit more expensive, but ineffective. There is a mismatch of currency risk for agricultural and organic producers because borrowing takes place in foreign currency (euro) while most agricultural products are sold in local currency (dinar). Many organic producers are faced with a problem of accessibility of banking services. A small number of branches in Serbia operate in the rural environment. Farmers cannot approach a bank, at a branch office level, to get a loan (a survey on accessibility and the degree of satisfaction with banking services conducted by Marinkovic, Ljumović, 2010, reported relatively favorable situation in general, but with the caveat that distribution is uneven and unsatisfactory, especially in the rural areas).

Other financial institutions that are lending to the agriculture and organic producers include state funds, integrators, leasing companies and microfinance institutions. State funds are the second biggest lender to the agricultural sector with share of about 25% in total lending (USAID, 2013). Most active funds are the Serbian Development Fund, the Export Credit and Insurance Agency (AOFI), the Indemnity Fund of Serbia, the Vojvodina Guarantee Fund and the Vojvodina Provincial Fund for Agricultural Development. Although farmers may use the resources of all funds, the last three funds are specialized in agriculture.

The leasing sector, as well as the banking sector, recorded the highest growth in terms of total assets, but this sector is mainly focused on transport and automobile funding. Agricultural leasing is limited to tractors and combines and to investments in a small number of medium-sized equipment, thus arriving at an average of about 6-7% of the overall portfolio of all leasing companies (USAID, 2013).

Micro-finance institutions should be common creditors of agriculture. Unfortunately, in Serbia they are limited by the current regulatory framework as the Law on Banks does not allow for the establishment of credit institutions, except for banks and leasing companies that could directly provide loans to the agriculture or to any other business sector. This puts banks in the privileged position. Three private microfinance institutions

in Serbia operate in LLP or NGO legal status. They cannot lend directly to the clients and they operate through the local banks, placing their cash assets in a bank account as collateral against loans made by the partner banks. Since they are forced to work with banks, microfinance institutions in Serbia have higher rates than banks, but strive to lend in local currency (Ljumović, et al., 2015).

Agriculture and agriculture financing is a politically sensitive issue since governments tend to intervene through several instruments: subsidies, loan quotas, incentives, credit support, rural economic development programs, etc. However, these programs are usually made *ad hoc,* from one budget year to another, and have a high degree of uncertainty. They depend on the current political situation and on the government, and they are not adjusted with long-term strategic goals of the agricultural policy.

In order to determine the funding sources available to organic producers and to explore the problems they face in Serbia when trying to access finance, we used a survey method. The hypotheses and survey were developed based on the interviews with organic producers and academics dealing with organic production. During the interviews, organic farmers stated that they started their activity for economic reasons and were satisfied, to a certain degree, with the results achieved. Nevertheless, they pointed out the constraints and the problems faced in the course of their activity. This is mainly related to the supply of inputs for organic production, distance from the market, marketing of the products, lack of qualified staff, lack of capital/subsidies for further investments and development. Other challenges include pest management, weed control, feeding, environmental constraints (poor quality of soil, water shortage, steep slopes, small parcels etc.), lack of available land around farmers' holdings, lack of knowledge on organic technology, lack of external assistance/extension services, lack of communication with the relevant Ministry and relevant authorities, especially when applying for subsidies, poor livelihood conditions/lack of asphalt roads, lack of infrastructure, lack of water supply, etc. having conducted the analysis, we have excluded environmental problems, sales market and government support measures, and we have designed the survey analyzing the problems of access to finance.

Based on our previous experience and interviews with the organic produces, we have formulated our hypotheses:

H1: Access to finance for the organic producers in Serbia is limited. They are usually financed from own capital or from a bank loan.

H2: In theory of access to finance for the organic producers in Serbia, three groups of users can be identified.

H3: Most common external funding source, the bank loan, is not adjusted to the organic producers' needs.

Taking into account the defined hypotheses, the identified constrains and the literature review, we structured the questionnaires. For the purpose of data collection, structured questionnaires were originally scheduled to be distributed in two ways. The first one

involved creation of a database of the organic farms' email addresses, and sending out email questionnaires. This method was less efficient and about 15% of sample was collected in this way. The second method involved previously scheduled meetings with farm owners and filling out of questionnaires on the spot, at the organic farms. To ensure reliability of the collected data, respondents were asked to provide personal data and the data on the contact person. Most of the respondents refused to give a permission to disclose the information about their farm in this research. Questions contained in the questionnaire were stipulated in a way that allows further processing and statistical analysis.

The questionnaire comprised two parts. In the first part, respondents gave answers to the questions on their personal data and on the data of the farm: name and address, type of registration, status of the farm, details about the certificate of organic farming and process of land conversion, main activity, number of employees, etc. The second part of the questionnaire contained questions on the farmers' opinion on access to finance and on identification of the problems they face with access to financial resources. Each question in the questionnaire was accompanied with a concise explanation in order to eliminate possible errors and ambiguities.

The survey covered the selected rural areas in the territory of the Republic of Serbia in places with the organic production. The study included 100 respondents in different stages of organic production (in the process of land conversion, not having started to produce organic products yet; a portion of the land converted; and conversion completed and the production started) and with different experience in access to finance. The response rate was 34%. Even though the questionnaire contained no question on age, we gained the impression during the survey that the youngest respondents were most willing to cooperate. We were collecting the primary statistical material from November 2014 to February 2015. Table 1 shows basic characteristics of the sample.

The vast majority of respondents (82%) are registered as a farm (as natural persons, pursuant to Serbian law). Regarding the question of ownership of the land they cultivate, they could choose multiple answers. They mainly cultivate their own land, but if they see profit they do not hesitate to rent the land from private entities or, if possible, from the state. Only 11.8% of respondents converted the entire land, while others are converting additional parts of the land or starting land conversion for the first time. The sample included farmers who have converted the land for the first time and have become organic producers, since they bear the highest costs and have the greatest need for financial resources. The question regarding activity was also a multiple-choice question, and the greatest number of producers declared themselves as fruit growers.

Table 1. Frequencies of the basic characteristics of the sample

Question	Answer	Frequency	Percent
Registration	Company	4	11.8
	Entrepreneur	2	5.9
	Farm	28	82.4
Ownership	Personal	30	88.2%
	Rented from private entities	6	17.6%
	Private land you are using for free	0	0%
	Rented from the state	3	8.8%
	State land you are using for free	4	11.8%
Total Land Conversion	Yes	4	11.8
	No	30	88.2
Activity	Fruit	16	47.1%
	Vegetable	10	29.4%
	Crops	11	32.4%
	Livestock	4	11.8%
	Other	1	2.9%

Source: Authors' own calculation based on the survey

Data analysis and results

Data analysis was performed by using MS Office Excel and SPSS.

One of the purposes of this research was to examine whether organic producers are satisfied with the quantity and quality of the available sources of finance. After series of interviews in which organic farmers expressed discontent with sources of finance available to them, we decide to ask them a direct question as to whether the sources of finance are available to them to the extent necessary. Next question allowed us to identify funding sources which the organic producers can actually access and use. If research showed that organic producers use only some of the available resources that would mean that access to finance is poor.

Almost 60% of the respondents are not satisfied with the supply of funding sources. Also, when observing the range of available sources used by organic producers, it is evident that the scope of financial providers is very limited. Organic producers mainly use own funds and various government programs, including subsidies. 38% of organic farmers covered by the research used bank loans. Interestingly enough, all organic producers who were surveyed left the field "Other (sources)" empty. Such results were expected because, in the previous interviews, respondents rarely specified other sources of financing than those listed in the questionnaire. When asked if they knew what integrators were, almost all of them responded positively, adding that even when they had cooperation (if any) with integrators, it was not in terms of financing.

Value chain in organic production exists because the purchase of final products is sometimes guaranteed to organic producers (especially if they are located near processors), but they lack sources of finance in the early stages of production. When asked if they knew what venture capital was, none of those interviewed gave positive response, so this kind of financing was excluded from the survey. A majority of the organic producers are familiar with grants approved by international institutions, but they are not prepared (do not have the knowledge and skills) to apply for such grants.

Table 2. Survey results related to general attitude towards access to finance

Question	Answer	Frequency	%
Do you think that sources of finance are available to you to the extent necessary?	Yes	2	5.9
	No	20	58.8
	Partially	12	35.3
What sources of finance have you been using so far?	Own funds (equity, family and friends)	26	76.5
	Foreign partner	5	14.7
	Bank loan	13	38.2
	Various government development programs including subsidies	27	73.5
	Grants from international institutions	0	0
	Other	0	0

Source: Authors' own calculation based on the survey

Following the theory of access to finance, we have tried to distinguish between three groups of users: those that are using services, those that are voluntarily excluded and organic producers involuntarily excluded. After consideration of available financial sources, we have decided to make a distinction between organic producers based on their ability to apply for and get a bank loan, because bank loans are the biggest external source for organic farmers (38%). Data referred to in Table 3 show three groups of users of the financial sources. The first group (38.2 % of respondents answered positively when asked whether they were using bank loans recently) includes users that have access to the financial system and use services. The second group comprises users who are voluntarily excluded (to the question regarding the reason for not using a loan, 23.5% of respondents answered "I did not need a loan" and 17.6% of respondents answered they had never applied for a loan). A more detailed analysis has shown that this group has the capacity to borrow from the financial system and it actually needs a loan, but has no confidence in the banking system or in the banking officers (this was the most frequent answer to the question why do not they use bank products), but opts for own sources of finance or for borrowing from friends, family or neighbors. Interestingly enough, respondents belonging to this group are willing to borrow from the bank if and when they regain confidence in the banking system, but according to their estimates there is a long way to go. Respondents who never applied consider the application process to be arduous and complex, they do not know how to apply or do not believe they will be granted a loan. The third group, involuntarily excluded organic produces (17.6% of total respondents - those who applied for bank loans but were

denied) cannot get loans because they are not in line with the bank policy or cannot find a guarantor. This third group is considered to be most vulnerable and requires urgent responses from policymakers, including a mix of measures designed to ensure that those involuntarily excluded have access to the financial services.

Table 3. Survey results related to problems in access to finance

Question	Available answers	Frequency	Percent	Valid Percent
Have you been using bank loans recently?	Yes	13	38,2	38,2
	No	21	61,8	61,8
	Total respondents	34	100	100
If you have not been using bank loans recently, please state the reason why	I did not need it	8	23,5	38,1
	I need a loan, but I have never applied	6	17,6	28,6
	I applied, but I was denied	6	17,6	28,6
	I had a loan, and I repaid it	1	2,9	4,8
	Total respondents	21	61,8	100,0
If you have never applied for a loan, please indicate why	I do not know how to apply	2	5,9	33,3
	The application process is arduous and complex	3	8,8	50,0
	I do not believe that the bank will approve me for a loan	1	2,9	16,7
	Total respondents	6	17,6	100,0
If you applied but were denied a loan, please indicate why	I have not yet repaid the previous loan	0	0	0
	I cannot find a guarantor	2	5,9	33,3
	I do not have a collateral	0	0	0
	I have a bad credit history	0	0	0
	I was told I was not in line with the bank policy	4	11,8	66,7 0
	Due to personal reasons (e.g. bank officers)	0	0	0
	Total respondents	6	17,6	100,0

Source: Authors' own calculation based on the survey

Taking into account that bank loans are the biggest external source (38%), we have analyzed whether the bank loans meet the organic producers' needs (Table 4). Organic producers who have been using loans opted most often for special-purpose loans (agricultural loan, 85%). If they use overdrafts, they use it on a personal basis, as natural persons. We did not identify any other bank products used by respondents.

Table 4. Survey results related to the use of bank loans

Question	Available answers	Frequency	Percent	Valid Percent
Please specify the bank products you have been using (if any)	Special-purpose loans	11	32.4	84.6
	Overdraft	2	5.9	15.4
	Guarantees	0	0	0
	Revolving Loans	0	0	0
	A letter of credit	0	0	0
	Other	0	0	0
	Total respondents	13	38.2	100.0
If you have been using bank loans, do you think they meet the needs of your farm/company	Yes	3	8.8	23.1
	No	5	14.7	38.5
	Partially	5	14.7	38.5
	Total	13	38.2	100.0
If your answer to the previous question is NO or PARTIALLY, please indicate whether the loans are adjusted in relation to…	Maturity	2	5.9	20.0
	Terms of repayment	3	8.8	30.0
	Collateral	2	5.9	20.0
	Other	3	8.8	30.0
	Total	10	29.4	100.0
What is the reason you opted for a particular bank	Lowest interest rate	3	8.8	23.1
	On the basis of previous experience	4	11.8	30.8
	Easy procedure for loan approval	0	0	0
	Personal relationships	3	8.8	23.1
	Flexible loan terms	1	2.9	7.7
	Good reputation	0	0	0
	The proximity and convenient working hours	1	2.9	7.7
	Random	0	0	0
	Other	1	2.9	7.7
	Total	13	38.2	100.0

Source: Authors' own calculation based on the survey

Organic producers who participated in this survey consider that bank loans do not meet their needs (38.5%) or that they partially meet their needs (38.5%). Only 23.1% of respondents who have been using bank loans think that loans meet their needs. Respondents are mainly unsatisfied with terms of repayment. Answers "Other" were also selected, and according to all the three answers, interest rate is the biggest problem when it comes to loans. We expected the interest rates to be the main criteria considered by the respondents when opting for a certain bank, but the survey has shown that only 23.1% of respondents choose a bank based on the lowest interest rate criteria. The main reason for this is previous experience and relations with the bank. It seems that personal relations also have big impact on the selection of a certain bank. At the time the survey was conducted, the number of loans not yet repaid by the organic producers who participated in the survey, ranged from 1 to 3, i.e. the average mean was 1.27. A

majority of the organic producers had one loan at the time the survey was conducted. Interestingly enough, only four respondents were able to clearly indicate the amounts of interest rates. These amounts varied drastically from 3 to 16%. We could not establish any regularity in this survey as to the question of banks which are most active in granting loans to organic farmers. Almost all banks in Serbia are equally represented regarding lending to organic producers, and only one stands out to a certain degree.

Conclusion

In this research, we have tried to identify the problems faced by the organic producers when trying to approach the formal financing system in order to provide necessary funding. Even at first glance, we can conclude that access to finance for the organic producers in Serbia is characterized by limited sources and government intervention with agricultural support measures.

After a series of consultations and interviews with the organic producers, we conducted a survey trying to reach all regions in Serbia where organic producers are present. The results point out that the hypotheses were properly set. There is an evident financial gap in the market for organic producers. Access to finance is poor and apart from own capital it is limited to bank loans and government subsidies. In the course of our interviews, the prevailing experience among the organic producers was that their borrowing is limited to bank loans, and therefore we focused on examining the terms and availability of bank loans. In this respect, the status of organic producers is very poor since more than 60% of respondents did not approach banking system. It is alarming that 17.6% of them are involuntary excluded from the system and cannot obtain external finance. The results on the adjustment of bank loans to the organic producers have indicated that there is no diversity of banking products and that organic producers use only few products. In addition, bank loans do not meet their needs regarding terms of payment, and a majority of organic producers think that interest rate is high. Commercial bank loans to the farmers and organic producers widely vary on the terms. However, the reason for this rests also with the fact that organic producers are accustomed to using government subsidies to a great extent, and this tends to weaken their attitude towards banks and the loan repayment culture.

This is one of the rare researches focusing on the demand side of access to finance in organic production. Further effort should be made to connect demand and supply in order to find the best solution for financing of organic production.

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PRISTUP FINANSIJSKIM RESURSIMA ORGANSKIH PROIZVOĐAČA U SRBIJI: ANALIZA TRAŽNJE

Isidora Ljumović[5], Biljana Viduka[6], Janko M. Cvijanović[7]

Sažetak

Cilj ovog rada je identifikacija problema sa kojima se organski proizvođači u Srbiji suočavaju prilikom pribavljanja finansijskih sredstava. Ranija istraživanja i dosadašnje iskustvo pokazuju da je u segmentu organskih proizvođača veća tražnja za finansijskih resursima od ponude, te da poslovne banke i ostale finansijske institucije ne žele ili ne mogu da zadovolje finansijske potrebe u lancu vrednosti. Zbog ovakve situacije poljoprivredni proizvođači se nalaze u takozvanom srednjem segmentu kome nedostaju izvori finansiranja. Da bismo dobili konkretne podatke od organskih proizvođača, kreirali smo upitnike kako bismo procenili nedostataka sistema kreditiranja poljoprivrednika. Istraživanje pokazuje da je pristup finansijama jedno od najvećih ograničenja sa kojima se organski proizvođači suočavaju i da postojeći mehanizmi za finansiranje nisu adekvatni.

Ključne reči: *pristup finansijama, organska proizvodnja, bankarski kredit*

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MECHANISMS OF SUPPORT FOR THE YOUNG RURAL POPULATION IN THE EUROPEAN UNION

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Summary

The main goal of this paper is an overview of existing and future mechanism of supporting young farmers in European Union. Positive effects of the measures of rural development policy, as well as restrictions in their operationalization were analyzed based on the insight into current reference sources and the regulations of European Union. Key recommendations for rural development policy regarding youth pertain to a higher degree of youth participation in the creation of development programs and projects, simplification of administrative procedures and a greater availability of information. Specific restrictions for potential young farmers include difficult access to farming land and a system of financing based on the refunds of invested resources.

Key words: *rural development policy, European Union, young farmers, rural population*

JEL: *Q10, Q18*

Introduction

Demographic changes and a reduction of rural population numbers are important issues that most EU countries deal with, primarily due to the strong influence that these questions have regarding the economic performance of rural areas. In the coming years, the share of the working-age population in the total population will start to decline in all countries of the European Union. All other things remaining equal, this so-called demographic burden will have a downward effect on economic growth (Van Dr Gaag and de Beer, 2015). One of the key priorities of rural development policies in the EU is the support for young people to stay in rural areas. The share of population between 15 and 65 years old is always significantly higher in urban areas and the proportion of old people (65 years old and more) is often slightly higher in predominantly rural areas (Camburu, 2010). Out of the total agricultural population of EU, young people make up only 6%. Also, the term "young farmer" implies a person of up to 40 years of age who is starting to work in agriculture at his/her newly established or inherited farm, possessing capabilities to

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improve the farm and manage it in accordance with standards of ecology, hygiene and animal welfare (EU regulation 1257/99). In order for the villages to possess the capacity for sustainable development, it is necessary to achieve affirmation for young people in rural areas, primarily through means of economic motivation.

The support to young farmers in EU is accomplished through the resources of European Agricultural Fund for Rural Development. Resources from this fund are routed towards future young farmers the 'setting-up of young farmers' measure, which supports establishing a new farm and starting its business. These subventions are aimed, primarily, at the goal of helping young people, future farmers, to successfully deal with all the challenges waiting for them upon entering the agricultural sector. This and other measures of rural development policies were created in order to provide support and encouragement for young people to stay and do business in a rural environment by creating possibilities of employment and promotion of services and infrastructure development which is positively influencing the social and economic vitality of the rural areas. Also, different types of support are realized within the national programs of rural development of each of the member countries. Help for young farmers such as training, advice and easier access to information are the most common ways of support realized at a national level.

Materials and methods

Considering the subject and goal of this research, the method of descriptive analysis is the most applied one, based on studying current reference sources and legal regulations of European Union. Reference sources served to create an insight into research done so far and experience regarding the measures of rural development policy intended for younger population. Method of comparative analysis is also applied significantly, considering the necessity of the overview of advantages and limitations when it comes to supporting young farmers in the previous (2007 – 2013) and the future (2014 – 2020) program period.

Efficiency evaluation of support measures for young rural population, as well as determination of the significance of this segment of rural development policy, represent the basis for an overview of supporting aspects of future young farmers of European Union in the following seven-year period.

Rural development policy of the European Union and the support form young farmers in the 2007-2013 period

Motivation of young people in rural areas to engage in agriculture and other non-agricultural activities in the period from 2007 to 2013 was operationalized by agricultural policy and rural development policy of the EU. Some measures were developed in order to have a direct influence on the economic motivation of young farmers to establish their own farms, while other measures indirectly influenced the improvement of the capacities of rural youth and took their knowledge and abilities to a higher level.

A measure that represents direct support for the young farmers is measure 112 – setting up of young farmers. It is common for all member countries that this measure is aimed at the population of up to 40 years of age. Total resources secured for helping young farmers to start their businesses for the 2007 – 2013 period were €4.82 billion from the European Agricultural Fund for Rural Development and €1.98 billion from national budgets (ERDF, 2014). From the total authorized amount, until December 2013, 75.8% of the resources was allocated to the projects (Zagata and Sutherland, 2015). Allocation of spent resources according to countries is as follows: France – €1.6 billion, Italy - €700 million, Spain - €561 million, Poland – €392 million, Romania €302 million. Until the end of the accounting period, i.e. until December 2013, more than half of the member countries did not use the entire amount of resources intended for financing this measure. Data from 2013 shows that on the level of the Union a total of 126,000 young farmers used these subventions intended for starting a farming business, the largest number of them being from France, Poland, Italy, and Romania (ERDF, 2014). Measure 112 was aimed at farms run buy young farmers whose goal is increasing production capacities and modernizing farms. Also, this measure, as Slovenian experience shows, stimulates the transfer of farms from older to younger generations of farmers (Hočevar-Knežević, 2012). At the same time, a global comparison shows that, in 2010, the average financial support per one person employed in agriculture totaled 6574 euro in the EU-27 (Ciutacu et all., 2015).

Second measure intended for young farmers is measure 121 – modernization of agricultural farms. This measure exists in all programs of rural development of EU member countries. Basically, measure 121 is supported by all farmer categories, however, some rural development programs connect subvention approval with specific criteria when farmers up to 40 years of age are in question. A good example of this is the Netherlands which defined a sub-measure 121A which provides support from agricultural investment by young farmers. The condition that farmers have to fulfill in order to apply for using the resources from measure 112 is a finished agricultural high school or three years of work experience. In order to provide more favorable conditions and thus motivate future young farmers, Finland, within its national program of rural development, defined a sub-measure whereby young people are allowed a grace period of 36 months in order to fulfill the conditions regarding education or work experience.

Third measure, affirmative for young farmers, is measure 111 – vocational training and information actions. In Hungary and Romania, young farmers who are using resources from measure 112 are obliged to take part in training organized within measure 111. Even though organizing vocational training does not pertain exclusively to young farmers, in some EU countries the resources intended for financing measure 111 are mostly used for organizing workshops and seminars for this farmer category.

Other measures of rural development influencing the position and perspectives of young farmers in most EU countries is realized through programs within Ose 3 and LEADER programs. Stand-out measures in this group are:

- Measure 321 – basic services for the economy and rural population. By

applying this measure Finland and Sweden are fighting against the migration of young population from rural areas into cities. Through various activities organized by resources intended for measure 321, not only employment and vocational training in agriculture are accentuated, but also the improvement of the possibility for using cultural and recreational content. By investing into rural infrastructure, these two countries are trying to motivate young people to stay in the villages/towns.

- Measure 311 – diversification of non-agricultural activities. Some countries of EU, such as Sweden, recognized this measure as a tool for promoting sustainable possibilities of employment, especially for young farmers. Farm businesses working on production and sales of products which are not directly in connection with primary agricultural production are also encouraged by this measure. This measure is designed to create conditions for alternative sources of income and employment for farmers and their families, and also to create benefits for broader community (Vapa-Tankosić and Stojsavljević, 2014).
- Measure 312 – support for the creation and development of micro-enterprises. Special attention is paid to young people organizing their own work. Romania defined in its national program of rural development a specific criterion within measure 312 where priority is given to women of up to 40 who live in rural areas and are interested in starting their own company. The existence of this measure proves the determination of the EU, as can be seen from the policy framework where two critical groups or rural population for achieving economic and social cohesion are the youth and women (Kazakopulos and Gidarakou, 2003). Similar to this, youth and women in rural areas are support via measure 313 – encouraging activities in tourism.
- Young rural population is the target group for both measure 331 – training and information and measure 421 – inter-territorial and transnational cooperation. Belgium, Poland, Sweden, Estonia and Great Britain apply these measures in order to encourage young population to stay in rural areas.

Apart from an institutional support to the young rural population which is financed by European Union by way of a mechanism of measures within the second pillar of Common Agricultural Policy, development programs and projects intended to encourage young people to stay in rural areas are realized at a national level. This development concept which equally consolidate social, ethical, ecological and economic dimension are more and more desirable. It demand networking of different scientific areas, pluralism of thoughts and consensus of actiong based on communication, tolerance and solidarity (Tolić and Pušić, 2010). Starters of this type of projects are in most cases local action groups and associations. Other initiators of the project are representatives of national, regional, or local authorities, as well as private initiatives from large private companies, universities and national networks for rural development. Organization and pooling together of young people in rural areas, as well as young farmers, was recognized by

most countries of European Union as a very important factor of their successful active involvement in the process of creation and operationalization of the policy and program of rural development (ENFRD, 2013).

Positive and negative points of rural development policy from the aspect of young farmers of the European Union

Efficiency of every policy is measured, among other things, by the quality of the system of its evaluation. Considering this, a workshop was held in Brussels on December 11th and 12th 2013, organized by the Initiative on youth and young farmers in rural areas, attended by representatives of all the countries of European Union. From a total of 161 participants, 51% were young farmers, 37% were rural youth, 29% representatives of EU institutions, while other participants were representatives of authorities, national rural development networks and other relevant subjects. Presentation of examples on the project and initiatives success via discussions, the workshop allowed the youth to talk about key questions they are dealing with as inhabitants of rural areas. The goal of the workshop was to point out positive sides, as well as limitations that young farmers came up against regarding the policy and programs of rural development in the previous period. Based on the conclusions of this workshop and other means of evaluation, European network for rural development published an evaluation of the effects on rural development policies from the aspect of youth.

Table 1. Advantages and limitations of rural development policy in the period from 2007 to 2013 from the aspect of rural youth in European Union

Advantages	Limitations
Increasing the degree of involvement of youth in the programs of rural development - Recognition of youth as a target group in development strategies - Participation of youth in defining the program of rural development	Increasing the degree of youth participation in the programs of rural development - Low level of rural youth participation in the application of rural development programs
Recognition of young population as the target group of rural development policy - Specific criteria for approval and financing of rural development projects intended for young people	Recognition of young population as the target group of rural development policy - Young people often do not have an insight in the programs of rural development
Strengthening rural youth - Simplifying administrative procedures for projects with a small budget or umbrella schemes - Organizing training in project and entrepreneurship development	Strengthening rural youth - Youth often do not direct projects intended for them - Complex administrative procedure, large bureaucracy and financing problems

Source:http://enrd.ec.europa.eu/enrdstatic/app_templates/enrd_assets/pdf/youth_and_young_farmers/workshop/YouthWorkshopReport_web.pdf

Facts such as that rural youth is not represented enough at a local level of the authorities, i.e. not participating enough in the process of decisions is stated as the greatest obstacles for increased youth participation in creating and realizing the policy of rural development, as well as the fact that some countries (Estonia, Netherlands, Cyprus) lack strong organizations of young farmers. The result of insufficient participation are projects and initiatives designed for young people, not by young people. The expectations of young people and young families in rural areas are diffiernt to those of previous generations. Creating a social and community framework that meets those expectations is an integral part of effective rural development (Ali et all, 2011).

In order to increase the efficiency of this type of projects in the future accounting period, it is necessary to achieve a higher degree of cooperation between the participants, in the planning process, as well as all the phases of project realization. This type of coordination was not present enough in the 2007 – 2013 period, which is considered one of the flaws of EU rural development policy.

Lack of information on the sources of financing, as well as a broad and complex administrative procedure have been recognized by the youth as a restricting factor for design, application and implementation of projects. Long waiting periods for the decisions on project approval and frequent changes of rules also represent limitations pointed out by young farmers' population. Rules of project financing imply a system based on the refund of invested resources. This implies that in order to realize a project one must take a loan, which is unfavorable to young farmers considering their limited abilities of securing a loan via guarantees or mortgages.

Lack of experience in working on projects is a serious limitation for young farmers, from applying for a project to its implementation. Lack of management knowledge limits young farmers in the process of starting up their own business, i.e. a new agricultural farm. Existing education system in most EU countries does not provide enough training concerning actual business market, which is a serious drawback for future young farmers. Recommendations state that new farmer generations should be given basic knowledge in environment protection, multi-functionality, diversification of agricultural activities on a farm, organic farming and other relevant questions that they might encounter in reality, all that through the education system.

Access to farming land is seen as a key limitation for future young farmers. In some EU countries, such as Ireland, farmers retire at a very old age, preventing the young farmers' access to land. Situation is additionally complicated due to the fact that large farms are given significant subventions so that the owners of such land, which might not be used for farming at all, do not want to sell it. Price of land, tax system, as well as European and national regulations add to the problem of young farmers obtaining land, which hinders the creation of new farms.

Table 2. Suggestions and recommendations for the implementation of rural development programs in the future

Recommendations for rural development policy creators (ministries, national rural development networks, local action groups)	**Recommendations for rural youth and their organizations**
Use of pro-active and long-term approach when targeting rural youth while planning development strategies	Active promotion of subjects regarding the position of youth in rural areas
Securing a higher degree of cooperation between rural youth and decision makers at all levels	Improving connection, cooperation and an exchange of experiences
Securing an easier access to financial sources, advice agencies and information.	Improving knowledge in project proposals and project management
Encouraging and supporting projects designed by young people, and not only projects designed for young people	Supporting the dissemination of information
Appreciation of the voice of young people at a local level	Informing policy creators regarding ideas, needs and challenges that await young people in rural areas

Source:http://enrd.ec.europa.eu/enrdstatic/app_templates/enrd_assets/pdf/youth_and_young_farmers/workshop/YouthWorkshopReport_web.pdf

Based on the experience of EU countries in implementing rural development policy 2007 – 2013, the following success factors from the aspect of rural youth stand out:

I Inclusion of young people in rural development policy at a local, regional and national level:

- Active inclusion of young people in strategic document development at EU, national, regional and local level should be one of the priorities. Active participation is the best way to bring concrete problems of young farmer population into development documents.
- SWOT analysis of the position of youth in rural areas proved to be a solid basis for recognizing the problem and defining measures for the most effective solution to those problems.
- Considering that rural youth are highly heterogeneous, when developing and implementing development documents it is necessary to respect the differences in needs and problems of young farmers and non-agricultural young population.
- Cooperation between young people within local action groups, as can be seen in Sweden and Great Britain, has proven to be one of the key factors of successful work at a local, as well as regional and national level.
- Strengthening of organizations that gather various categories of young people (farmers, entrepreneurs, students, etc.) has proven itself as a significant step

towards a higher degree of inclusion of young people in social life. However, inadequate financial support for start-up and work, with human capital that is not established and a lack of highly motivated young leaders is limiting the options for creation and work of such organizations.

II Financial improvements:

- It is necessary to increase the degree of cooperation between various financial sources for the program and projects of rural development intended for young people. The degree of coordination needs to be improved in order to increase the efficiency of use regarding funds at disposal and to avoid overlapping.
- Information on financial sources have to be accessible by young rural population. Optimal solution would be to forma one source of information regarding all sources at disposal and the resources granted by them.

III Simplification of administrative procedures:

- Simplification of the procedure for project application would encourage not only young farmers but all other categories of potential users of funds.
- Forming specific advisory services that would provide support for young people during the implementation of the project is considered one of the key factors of success for rural development policy in the future period.

IV Active participation in development projects:

- Inclusion of young people in the design of the project is considered a key factor for success. Creation and management of the project by young rural population has proven to be an important success factor. "If young people feel like guests on the projects, they will not feel welcome and they will not stay on the project. If, on the other hand, they are given the opportunity to make decisions and bear responsibility, they will see the project as their own and will put in all their capacities to make sure the project is successful" (ENRD, 2014)
- Hiring a trainer for young people within the local action groups would increase the chances of success of the rural development policy, i.e. the program intended for young rural population. The task of the trainer would be to work with young people, communicate their problems and expectations to local action group and work on their education and provide information. This would allow for coordination between trainers in different regions of a country, which would bring about better understanding of youth problems and would improve their position in rural areas.

V Advancing knowledge and skills:

- Advancing knowledge and skills of young people is crucial for their active and purposeful engagement in rural development. Improvement of knowledge and skills, i.e. capacity building, can include different areas,

from project application to entrepreneurial activities.

VI Providing information:

- An important success factor for rural development policy is the availability of information on development possibilities and good experiences. Types of providing information should be in line with the habits of potential users of such information. Creating particular websites and smartphone applications would allow for an easier dissemination of information among young farmers population.
- Introducing young famers to the projects that have yielded good results in different EU countries would serve as an encouragement for design and realization of potential new projects.

Key problems for young rural population, regardless of whether it is focused on agriculture or some other type of activity, in most EU countries are: unemployment, limited opportunities to join social activities and undeveloped infrastructure. Following the above stated recommendations for rural development policy in the future program period would create a solid platform for solving fundamental problems of the young rural and farming population of EU.

EU rural development policy 2014-2020

EU rural development policy continually shifts following the changes in rural areas. In accordance with the regulations of the development document "Europe 2020" and the general goals of Common Agricultural Policy 2014 – 2020, three long-term goals of rural development policy are as follows:

1. increasing competitiveness of agriculture;
2. sustainable management of resources and taking action against climate change, and
3. balanced territorial development of rural households and communities, including the creation and retention of work places.

Without changing the system applied in the previous period, EU rural development policy 2014 – 2020 will be realized through national and/or regional rural development programs lasting seven years. The novelty in rural development policy starting from 2014 is:

- improvement of the strategic approach to the development of national and regional programs of rural development;
- improvement of the content of rural development measures
- simplification of rules and/or reduction of administrative procedure regarding rural development programs in cases where this is possible, and
- stronger bond between rural development policy and European Structural and

Investment Funds

In the period 2014 – 2020, EU rural development policy has the following six priorities:

- improvement of knowledge and innovation transfer in agriculture, forestry, and rural areas;
- increase in competitiveness of all types of agricultural practice, as well as the use of new technologies in agricultural production and sustainable forest management;
- organization of a food supply chain, carrying out of activities regarding animal welfare and risk management in agriculture;
- regeneration, preservation and improvement of ecosystems closely connected with agriculture and forestry,
- promotion of efficient use of resources;
- reduction of poverty and improvement of economic development in rural areas through social inclusion (EC, 2014).

Within each of the stated priorities the so-called 'areas of interest' are defined, i.e. certain more detailed areas of intervention. Based on a comprehensive analysis of needs, every member country or region decides their own areas of interest and implements them in the national program of rural development. Programs define concrete measures for achieving the goals and the amount of resources to be allocated to each measure as well. Rural development policy measures are financed partially from European Agricultural Fund for Rural Development and partially from national, regional and private sources. Execution and efficiency of rural development policy is followed and evaluated.

Program period 2014 – 2020 foresees an extension of support for young people in rural areas through subventions for setting up their own farms and starting agricultural businesses (measure 112 – 'setting-up aid'). Member countries can include thematic sub-programs in their national rural development programs regarding the support for young people in rural areas. Within the sub-program, the following types of support are provided:

- business setting-up subventions;
- farm starting subventions;
- physical infrastructure subventions;
- knowledge and information transfer;
- advisory services;
- farm management services;
- pooling together, and
- investing in non-agricultural activities (EU regulation 1305/2013).

Within the measure that provides subventions for building a physical infrastructure, farmers up to 40 years of age are provided up to 20% higher amount than in other farmer categories. Help for young farmers for starting their own business, i.e. for setting-up a farm was planned in amounts up to €70,000 and will be paid as part of 'farm and business development' measure (EU regulation 1305/2013).

Support for young farmers, however, is not limited only to EU regulation 1305/2013. It is planned, as in the previous planning period, that various types of support be realized through individual programs of rural development and local development strategies. Some countries, such as Austria, Italy, Poland, Slovakia, Sweden, and Great Britain have already started, half-way through the previous planning period, the preparations and consultations regarding the participation of young farmers in creating rural development policy for the 2014 – 2020 period. In Austria and Slovakia young farmers are actively participating in workgroup activities planning development programs intended for young farmers, small farms and diversification of economic activities on farms. With the goal of stopping the outflow of young people from rural areas, Poland has planned, in the following period, a higher degree of engagement of local action groups in the process of inclusion of young people in various development programs.

Conclusion

Agriculture represents the dominant economic activity in rural areas of European Union. Such economic structure creates the need for mechanism in Common Agricultural Policy measures which will directly and economically motivate young people to stay in rural areas. Considering that people represent the key potential of every development, including rural, the importance of increase in human capital in rural areas is emphasized. Stimulating young farmers to stay has a direct positive influence on establishing steady territorial development, i.e. reducing economic differences between rural and urban areas of European Union (Marković et all., 2012). Apart from this, it should be taken into account that the age of the farmers influences their relationship with the concept of sustainable development of agriculture and a clear orientation towards efficient agriculture which also respects the standards of environmental protection and animal welfare.

The existing system of support for young rural population in European Union is continued in the 2014 – 2020 program period. Apart from positive effects that the policy of rural development ensured for young farmer, there are certain obstacles in the way of their stronger economic motivation for staying in rural areas. Success factors of rural development policy imply active participation of young people at the national, regional, and local level, improvements in the area of financing, simplification of administrative procedures, advancement of knowledge and skills, as well as a more efficient system for providing information. With these recommendations, which will be a part in European rural development policy in the future, it is more than desirable to promote agriculture as a sustainable contemporary business, and not just a traditional activity, while pointing out its social importance. Allocation of funds for rural development should increase, mainly for economic but also helth, political and social reason (Andrić et all., 2011).

It is especially important to point these promotional activities towards young female population in order to increase the number of female farmers in EU. In the end, the importance of this topic can be heard in the words of Dacian Ciolos, former European Commissioner for Agriculture and Rural Development, stated at the meeting of the European Council of Young Farmers, where he point out that: 'If agricultural policy does not secure perspective for young farmers, we can only ask ourselves whether there is a future for European agriculture at all.'

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MEHANIZMI PODRŠKE MLADOJ RURALNOJ POPULACIJI U EVROPSKOJ UNIJI

Katarina Đurić[3], Zoran Njegovan[4]

Rezime

Sagledavanje postojećih i budućih mehanizama podrške mladim farmerima u Evropskoj uniji predstavlja osnovni cilj ovog rada. Pozitivni efekti mera politike ruralnog razvoja, ali i ograničenja u njihovoj operacionalizaciji analizirani su na osnovu uvida u aktuelne literaturne izvore i zakonsku regulativu Evropske unije. Ključne preporuke za vođenje politike ruralnog razvoja u njenom segmentu koji se fokusira na pitanja mlade populacije, odnose se na veći stepen participacije mladih ljudi u kreiranju razvojnih programa i projekata, pojednostavljenje administrativnih procedura i veću dostupnost informacijama. Posebna ograničena potencijalnih mladih farmera vezuju se za otežan pristup zemljištu i sistem finansiranja zasnovan na refundaciji investicionih sredstava.

Ključne reči: *politika ruralnog razvoja, Evropska unija, mladi farmeri, ruralna populacija*

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Review article

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ORGANIZATION AND COSTS OF REPURCHASING, TRANSPORTATION, WAREHOUSING AND STORAGE OF RASPBERRY FRUIT[1]

Branka Kalanović-Bulatović[2], Bojan Dimitrijević[3], Dušan Milić[4], Zoran Milovančević[5]

Summary

Due to its characteristic, apart from nutritive and medical significance, raspberry is particularly important for our country in social and economic terms, since its export attracts foreign currency inflow.

Since the quality of raspberry decreases rapidly after picking, it is utterly important that the whole process, from picking to cold storage of fruit, should be rationally organized, thus finally reducing the costs and increasing the production value. For these reasons precisely the research deals with organization of the entire process, from repurchase to cold storage of raspberry fruits, as well as the analysis of pertaining costs.

Necessary information for the preparation of the paper has been obtained from cold storage plants engaged in raspberry storage and preservation.

Necessary information has been gathered using several methods, viz: observation, interview and content analysis methods. Furthermore, analysis, comparison and calculation methods have also been used in the preparation of the paper.

The raspberry fruit repurchase, transport and storage costs range from 1,6 to 1,8 EUR per kg, exclusive of storage (store-housing). To this one should add store-housing costs ranging from 0,009 to 0,013 EUR per kg on a monthly basis.

1 Paper is a part of research within the projects: Sustainable agriculture and rural development in the function of accomplishing strategic objectives of the Republic of Serbia in the Danube region (No. III 46006), and Rural Labor Market and Rural Economy of Serbia - Income Diversification and Poverty Reduction (ON 179028), financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia. Project period: 2011-2014.

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Modern organization of production and communication between producers, re-purchasers, processors and exporters is essential in order to decrease fluctuations in repurchase and sales price of fresh raspberry and its products and the improvement of overall financial effect of all links within the chain of this economy activity. Cold storage plants, even if of minor capacities, are beneficial not only for the immediate participants in the producer-buyer chain, but it also makes an important stimulating factor for rural development and economy of the country.

Key words: *organization, costs, storage, freezing, raspberry*

JEL: *L 230, Q 13*

Introduction

Raspberry is one of the most important agricultural products, since it provides huge foreign currency income and a leading position of our country in the list of the most important producers and exporters of this fruit in the world. We can say that raspberry falls within most significant products, with regard both to agriculture and Serbian economy in general. Namely, in recent years, annual production of raspberries has been around 80.000 t which makes approximately 5.5% of the total fruit production. Over 90% of produced raspberry is frozen and exported and the rest is sold as fresh or processed in other products. Serbia participates with around 25% in the world raspberry production and exports mostly frozen and very rarely chilled raspberries (Dimitrijević, 2009). Thus crediting around 120 million EUR to the payment balance of our country (Kljajić, 2012). Additional economic importance of raspberries is reflected in the "extremely high level of marketing and competitiveness in the EU market, where demand for frozen raspberries produced in our geographical and environmental conditions is increasing." The largest quantities of raspberry from our country is exported to Germany, France, Belgium, Austria, Sweden, the UK and the Netherlands (Kljajić, 2014).

Serbia has numerous favourable conditions for the improvement of raspberry production and processing. We can draw such a conclusion if taken into account natural potential and certain infrastructural facilities (processing capacities). Such potential should be utilized properly.

Raspberry is among the most labour-demanding fruit products, since it requires much more labour than other fruits, in almost all stages of the production process, especially during picking. A significant number of people are also engaged in the fruit processing and transport. It is estimated that around 200.000 people work on raspberry growing in Serbia, including seasonal workers. In Serbia, production of raspberries is predominant in small family plantations sized 0.1-0.3 hectares, and in mountainous areas where 40,000-50,000 households in the plantations sized between 14,000 and 16,000 hectares participate in production.

Raspberry production may provide relatively high value of production, income and profit per unit of invested capital and manual labor.

We can say that increase in surface and yield, as well as raspberry processing and sale, could affect decrease in unemployment and rural poverty, thus increasing income of individual agricultural households and development of rural regions. In a word, raspberry production may directly and indirectly affect overall economic development of our country.

In order to keep our current position in raspberry production and export all over the world, we must constantly insist on the improvement of quality of fresh raspberry and finished products and reduction in the number of mediators in the sales chain.

Apart from the abovementioned, modern organization of production and communication between producers, buyers, processors and exporters is essential in order to achieve satisfactory economic results. This may reduce fluctuations in buying and selling prices of fresh raspberry and its products and improve overall financial effect of all links within the chain of this economy activity (Dimitrijević, Ceranić, 2011).

Taking into account everything mentioned above, the aim of the research was to determine the costs of repurchasing, transportation, warehousing and storage of raspberry fruit, as well as to analyse the organization of frozen raspberry production process.

Methodology and data sources

Information for this study was collected during the raspberry picking season, June and July 2014, at cold storage plants where raspberries were stored and preserved, located in Municipality Arilje, one of the most important raspberry-growing territories. The whole process was observed, from raspberry picking, transport, repurchase, delivery, storage, preservation, to the shipment of frozen raspberries to the buyer. Some data and information were gathered through interviews with responsible persons who actively participated in the entire chain. Internal documentation of the business system dealing with the above mentioned activities was also analyzed. Therefore, methods used to collect necessary data and information were: observation, interview and content analysis. Apart from this, analysis, comparison and calculation methods were used as well.

Research Results

After picking, fruit has to be transported as soon as possible to the end user or processing facility. In case of raspberry, it is usually a cold storage plant. Recommendation is to refrigerate picked fruit the same day. Quick refrigerating of fruits after picking slows down ripening process and minimizes occurrence of some physiological diseases (Nikolić, Milivojević, 2010). It is estimated that Serbia loses 30-40% of its products in different stages after picking.

It is utterly important that the whole process, from picking to cold storage of fruit, should be rationally organized, thus finally reducing the costs and increasing the production value. For these reasons precisely the research deals with organization of the entire process, from repurchase to cold storage of raspberry fruits, as well as the analysis of pertaining costs.

Basic Task of Warehouse and Storage of Fruit in Cold Storage Plants

Ever since ancient times, people have strived to keep nutrition food fresh for as long as possible. Thereby, fresh fruit is offered year round. Processing also preserves quality and value of product while at the same time, when possible, value is added through selection and technology, making fruit seem more attractive or valuable to the consumer.

Modern fruit growing is therefore unimaginable if adequate capacities enabling the after-picking fruit preservation, for shorter or longer period of time, are lacking. The length of this period depends on fruit species, technical properties of the storage and possibility of control of conditions inside the warehouse (temperature, relative humidity, concentration of oxygen and carbon dioxide, removal of ethylene, etc.) (Janković, 2002).

Importance of Cold Storage Plants

„Freezing is one of the oldest and most widely used methods of food preservation, which allows preservation of taste, texture, and nutritional value in foods better than any other method" (FAO, 2005). The freezing process is a combination of the beneficial effects of low temperatures at which microorganisms cannot grow, chemical reactions are reduced, and cellular metabolic reactions are delayed (Delgado, Sun, 2001). According to some data Romans kept natural ice and transported it in cars covered with hay (Ivanović, 2009). Today, even though there are other solutions, the best way for preservation of fresh fruit and keeping its freshness and aroma is in cold storage plants. Due to the invention of cold storage plants we now have fruits in markets year round. It is important to note that the quality of fruit stored in cold storage plants cannot be improved, only the existing quality can be maintained. For this reason, during the planning of production, it is necessary to take into account the choice of varieties of raspberries. Therefore, the strategy of raspberry market development, among others, should be based on the cultivation of raspberries that are suitable for storage over a longer period of time (Kljajić et al., 2013). Refrigerating capacities in Serbia today are around 483.000 t (Business Unit for Fruit and Vegetables, Belgrade, 2008). Nowadays there are different types of cold storage plants used for fruit, and basic differences are on the level of technical solutions and equipment used in them.

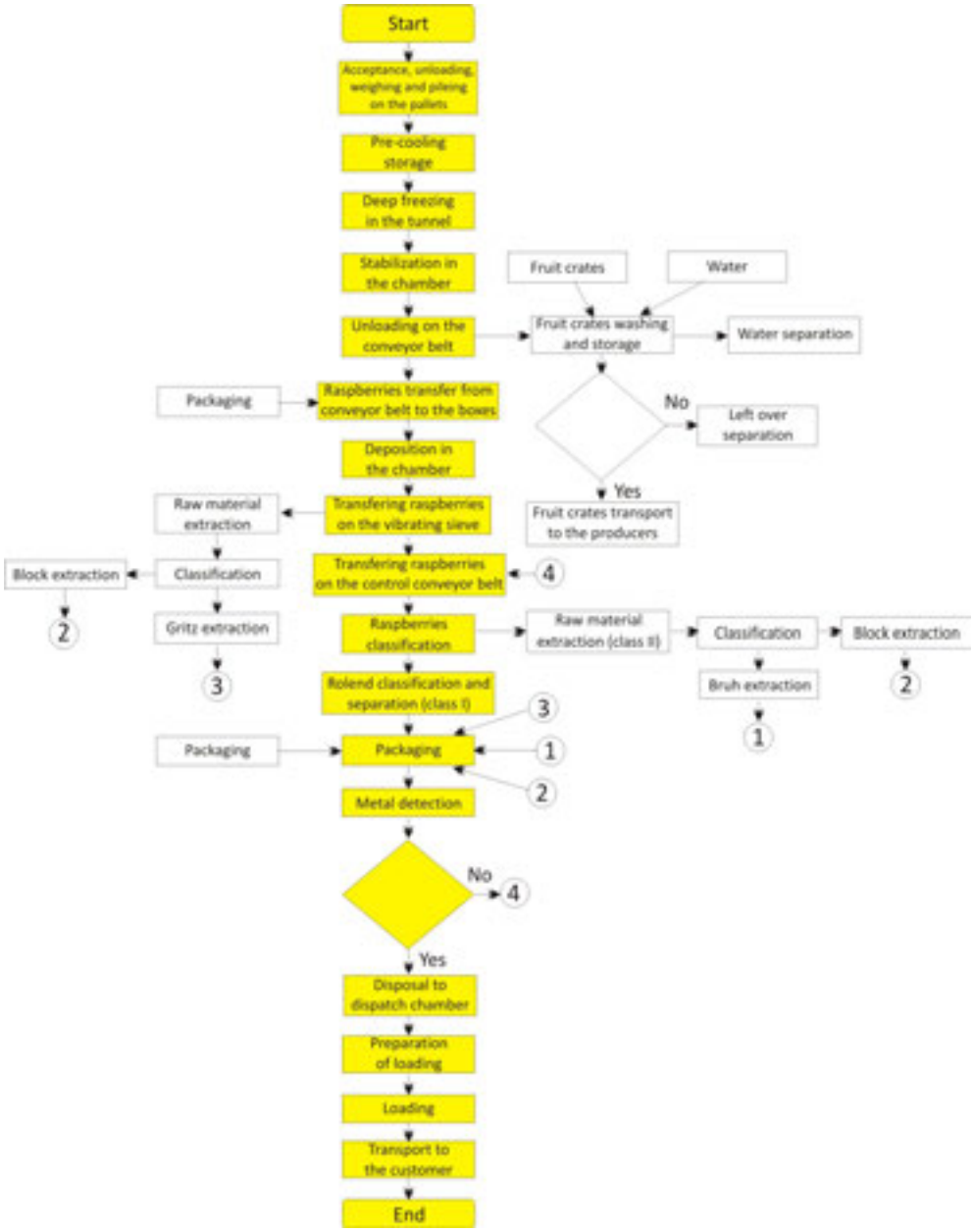
Organization of Frozen Raspberry Production Process

Frozen raspberry production is a complex process. It encompassed a series of activities applied from the acceptance of fresh raspberry at a cold storage plant to production of certain products of frozen raspberries. Organization of the production process of frozen raspberries is presented in process flow diagram (*Diagram 1*).

Acceptance – Producers transport fresh raspberry by their own vehicles in fruit crates that are provided by a purchaser. Control, i.e. quality assessment, is carried out at acceptance, samples are taken from each manufacturer and sent to authorized external laboratories to verify the content of pesticide residues, heavy metals and present

microorganisms. Then, raspberry is unloaded, classified, weighed and piled on a pallet. Fresh raspberries are classified into two classes: First class and Second class. Up to 80 t raspberries can be placed in a cold storage plant daily.

Diagram 1. The process of production of frozen raspberries



Source: Developed by authors using the observation, interview and content analysis methods

Pre-cooling Storage - Goods are placed on pallets and stored in pre-cooling (0 ° C - 2 ° C) where auto control is performed (method of loading pallets in a pre-cooling, air temperature and time of pre-cooling). Storage capacity is 1,000 tons of raspberries, in two cold storage plants with capacity of 500 t each.

Deep Freezing in the Tunnel - Pre-cooled raspberries are deep frozen in tunnels (from - 25 to -30 ° C). Auto control is performed in the tunnel (air temperature, turning -on and -off time, raspberry temperature). Up to 70 tons of raspberries a day can be frozen in the tunnels, depending on the tunnel capacity.

Stabilization in the Chamber – Deep frozen raspberry from the tunnel is placed in the chamber (-18°C) for stabilization. Auto control is performed in the chamber (date and time of the beginning of stabilization).

Unloading - After stabilization in the chamber raspberry is delivered for processing (0 ° C - 5 ° C), manually placed on a conveyor belt where major impurities are eliminated, and then packed into bags and boxes that were previously stored in packaging storage. Auto control is performed on the conveyor belt; (raspberry temperature, quality and quantity of unloaded fruit). 90-100 t of raspberries can be transferred daily in cold storage plant. At this stage 10 and 12 kg five-layer cardboard boxes are used, filled with bags of 10 kg and 12 kg. (5, 10 and 12 kg, in which 0.3, 0.75, 1, 2, 5, 10 and 12 kg bags are put).

Fruit Crate Washing and Storage – Empty fruit crates are transferred on a special conveyor belt to a washing machine and then stored in a warehouse for washed fruit crates wherefrom raspberry producers can take them for new fruit picking. Analyzed company has 80 000 fruit crates of its own. Up to 120 000 fruit crates can be daily washed on the conveyor belt.

Deposition in the Chamber – Raspberry in boxes is packed in so called ram pallets and then returned to the chamber at temperature of - 22°C.

Transferring Raspberries on a Vibrating Sieve - Boxes with deep frozen raspberries are transported from the chamber to the processing plant for further processing where they are manually unloaded in a vibrating sieve (auto control- amount of raspberries on vibrating sieve) where whole fruits are separated and sent to control conveyor belt, and the rest of the sieved raw material is collected in a separate, secondary packaging.

Raspberry Classification on the Control Conveyor Belt – Raspberries are manually selected on the control conveyor belt.

Rolend Classification and Separation (class I) – Raspberry is classified, (workers manually separate class II to a separate narrow conveyor belt) Class I i.e. Rolend is left on the conveyor belt.

Packaging - Rolend is packaged in separate primary packaging.

Metal Detection - Raspberry goes through a metal detector to check whether there is

any metal in the product. If so, raspberry goes back to the control conveyor belt, and the packaging in which it was packed passes separately through the metal detector to determine whether metal might be found in the package itself.

Mouldy, misshapen, quirky, broken, overripe and green fruits that are packed into bags and boxes are placed as secondary products in the chamber and are separated in a special part of the inspection conveyor belt. Auto control of packaging is performed (number and appearance of bags, quality of welds on bags, net and gross weight, date)

Disposal to Dispatch Chamber – After the metal detector, boxes with Roland are placed on pallets, labelled, stretch wrapped and returned to dispatch chamber.

Preparation of Loading, Loading, Transport to the Customer - Raspberry from the chamber is transported to the loading ramp, and then packed in refrigerated trucks to be transported to the customer. Temperature control is performed before pallet boxes are loaded into trucks and the boxes are visually checked for any signs of damage. Auto control is performed also during transportation to the customer (proper operation of cooling devices and temperature in the truck).

Raw Materials Extraction - Semi-product which remained in secondary raw material boxes after separation on a vibrating sieve is returned again to the inspection conveyor belt where Block and the mass for Gritz are separated, which make finished products when classified in such a manner. Gritz control is performed (vegetative and other impurities, mould, dry substance, dust). Secondary raw material is packed into bags and boxes, it passes through a metal detector, then is piled on a pallet and labelled, stretch wrapped and placed in the dispatch chamber, and finally loaded into refrigerated trucks (-18°C) and transported to the destination of the customer.

Raw Materials Extraction (Class II) - After separating Rolend, a semi-product remains on the inspection conveyor belt in a box with recycled secondary raw material, where after it is transferred back to the conveyor belt where Bruh and Block are separated, and classified to be packed into bags and boxes, it passes through a metal detector, then it is piled on pallets, labelled and stretch wrapped, placed in the chamber until loaded into refrigerated trucks and transported to the customer.

Raspberry Repurchase, Transport, Warehouse and Storage Costs

On the world market there is still plenty of room for the placement of fresh and processed raspberries. However, it is necessary to constantly perform market research, because in this way the company provides the information basis for production planning (Kalanović et al., 2003). This is one of the key factors for the successful organization of production and overall business success. However, the aggravating circumstance is the fact that the "economic conditions in raspberry production changes from year to year, as well as the repurchase price of fresh raspberries, which often leads to dissatisfaction among producers and even processors (cold storage plants)" (Veljković et al., 2006). This situation exist in our country for a long period of time. However, despite this, some

experts on the basis of their research concluded that "for fruit companies or farms is recommended the inclusion of the construction of cold storage in development policy, even assuming that such investment is largely financed by loans from commercial banks" (Ivanović et al., 2009). The investment process includes financial investment in the present in order to achieve economic benefits or effects in the future (Milic, Sredojević, 2008). It is always imposed a question of costs related to the repurchase, transport, warehouse and storage of raspberries, as well as the factors that affect them. The following part of the paper is an attempt to answer to these questions.

Raspberry original means raspberry fruit in the condition as purchased from the producer and finished products are the products after raspberry original selection.

Capacity of the cold storage plant – 2 chambers (1000 + 1050 t). What is specific about raspberry storage is the fact that products are stored at the refrigerating temperature of minimum -18 do -21 degree. Goods are contained in a cardboard five-ply packaging (k – 240) and boxes are arranged on industrial palettes (1,000 x 1,200) or cabinets specially made for that purpose and so arranged into chambers.

Storage costs depend on the price of electrical energy and fullness of the capacity of the storage chamber (the fuller the chamber, the less frequently we switch on the refrigerating, making the costs lower). Fresh goods entering the cold storage plant have approximately 3 – 4 % kal, and costs of electrical energy for freezing range from 1.1 to 2.8 EUR cent/kg.

We should point out that raspberry fruit storage has a number of options and combinations which are mostly subject to agreement between interested parties and the relevant circumstances (raspberry producer and cold storage plant operator). Most frequently raspberry fruits may be given to cold storage plants:

1. for repurchase,
2. for servicing refrigeration and storage, or
3. for servicing storage only (storehousing)

1.In the first case, raspberry fruit is repurchased by the cold storage plant operator and the producer is paid money for raspberry and has no influence or any connection whatsoever with further processing. In this case all further costs of handling are borne by the cold storage plant operator.

2. In the second case there are two options, raspberry fruits may be refrigerated without selection, while the other option includes selection, which entails additional costs. Handling costs – with or without selection on a monthly level.

Costs of acceptance, delivery, cooling, packing into boxes and bags and refrigeration (without selection) is 10 EUR cent/kg if handling is done for own needs. However, if it is done as a service activity, costs are twice as much (20 EUR cent/kg).

In 8 hours of work with 13 employees handling costs (taking fruit out of the wooden box) are 9 – 10 EUR cent/kg.

3. In the third case frozen raspberry is delivered to a cold storage plant, sent to chambers and kept at a regulated temperature. Average monthly costs of preservation are approximately 3 EUR cent/kg.

Accordingly, costs of raspberry cold storage and handling are relatively high (Table 1).

As can be seen from Table 1, the second largest share in the cost structure, (after the price of raw materials - raspberry), belongs to labor costs of raspberries buyers, which essentially represent intermediaries between small producers and processing facilities or customers. They supplied 75% of fresh fruit cold storage in Serbia, of which charge for their services and thus increase the cost of the end product (Radosavljević, 2008). In addition, it reduces the possibility of control of the origin of raspberry and increases the likelihood of various speculations. The exclusion of raspberry re-purchasers from the supply chain, as intermediaries, through various forms of integration of other supply chain participants, would increase the control of the origin of raspberry and reduce costs. Besides, any working arrangement that reduces handling will lead to lower costs and will assist in reducing quality losses (El-Ramady et al., 2015).

Table 1. Costs of raspberry reception, freezing and storehousing in a cold storage plant

Type of costs	Amount	Unit of measure	Amount of costs per 1 kg of raspberry	
			RSD	EUR[6]
Raw material price (raspberry)[1]	170	RSD/kg	170	1.476
Raspberry re-purchasers' fee	5 – 15	RSD/kg	5-15	0.043–0.130
Raw material transport material (raspberry)[2]	1 – 7	RSD/kg	1-7	0.009–0.061
Employees' fee	2 – 3	RSD/kg	2-3	0.017–0.026
Seasonal workers' fee	2 – 4	RSD/kg	2-4	0.017–0.035
Electrical energy (freezing)	2.5 – 3	RSD/kg	2.5-3	0.022–0.026
Raspberry freezing kalo[3]	2 – 4	%		
a) Packaging – box K-240[4]	36	RSD/pc	2.4–3.6	0.021–0.031
b) Packaging – bag[5]	6	RSD/pc	0.4–0.6	0.003–0.005
Wooden pallets (1,000 x 1,200)[6]	700	RSD/pc	x→0	x→0
Total:		RSD/kg	**185.3–206.2**	**1.608–1.790**
Raspberry storehousing/1 month[7]	1 – 1.50	RSD/kg	1 – 1.50	0.009–0.013

Source: Work of authors, based on the information obtained from the cold storage plants in Arilje

[1] Repurchase price of raspberry in the picking season – June-July 2014. This is the price at the repurchase point distant from the cold storage plant.

[2] These are average costs of raspberry transport to the cold storage plant. There are two options of such transport. First, when the cold storage plant organizes transport

6 115.21 RSD for 1 EUR–middle exchange rate of the National Bank of Serbia as at July 1, 2014

at its own cost, from the repurchase point to the cold storage plant. Then the costs of transport are 1 – 1.5 RSD per kilogram. If raspberry producers transport the picked raspberry by their own vehicles to the cold storage plant they get additional 5 to 7 RSD per kilogram. Therefore, at the cold storage plant itself the repurchase price was 170 + 5 to 7 RSD. Furthermore, it is very hard to determine precise amount of all costs.

[3] Freezing kalo is calculated by technologists at the cold storage plant. This is done by recording the weight of a few pallets of fresh raspberry before they are put into a tunnel. After freezing in the tunnel they are re-measured and the difference in weight is recorded. This value is actually the freezing kalo. There is also processing kalo which is recorded upon completing the total processing of goods. Processing kalo is around 1%.

[4] A box may contain 10 to 15 kg of raspberry (Rolend 10-12 kg, Bruh 11-13 kg, Gritz 14-15 kg).

[5] The said bag may contain 10 to 15 kg of raspberry, depending on the quality. In case of variety Rolend, the weight is 10-12 kg, Bruh 12-13 kg and Gritz 14-15 kg.

[6] 70 to 80 boxes, i.e. 700 to 1200 kg of raspberry may be packed on a 1,000 x 1,200 mm pallet. Pallets are replaced approximately at 5 years, which depends on expertise of workers and on the storage mode. In general, they should be plastic, but most cost storage plants used wooden ones, due to reduced costs.

[7] In practice, the price of store housing is most frequently calculated by month, but it can also be calculated by day. Recalculation is performed proportionally to the number of preservation days.

The cost of energy used for freezing process and storage of raspberry fruits is also significant. In many developing countries the cost of energy for industrial use is relatively high, highlighting the need for governments in developing countries to consider establishing lower energy tariffs in order to promote agro-food processing industries such as freezing (FAO, 2005). As for cost distribution, the freezing process and storage in terms of energy consumption constitute approximately 10 percent of the total cost of production (Person, Lohndal, 1993).

But, after all, the main cost of a cold storage facility is due to the construction of the building, preparation of the site, and provision of the services. In developed countries the freezing of foods represents a major industry, but in developing countries it is hardly developed. The frozen foods industry is considered expensive, mainly due to the high initial investment cost for the equipment (FAO, 2005). Public cold stores also provide service for small-scale operations and are relatively less costly than private ones.

The repair cost for cold storage facilities should be also considered. For example, the U.S. Department of Agriculture (USDA), in the long-run, recommends an expected repair cost for new freezers of 2 percent of the purchase price per year, but for used

freezers, this rate may be higher (Johnston et al., 1994).

However, design and construction costs of a cold storage facilities and the costs of storage of raspberry fruits in them could be substantially reduced. This can be achieved if the family farms, which perform almost the entire raspberry production in our country, join themselves. In addition to that, there could be other benefits as well.

It could be possible to standardize the technology and quality of stored products, to ensure the possibility of licensing cold storage facilities as a precondition for the introduction of warehouse receipts as collateral for loans to producers, and finally to carry out collective strategic market research and the introduction of "brand name" products (Tratnik et al., 2006). Without doubt, all of this could lead to a greater profitability, sustainability, and competitive advantages for all participants in postharvest supply chain of raspberry fruits.

Conclusion

Due to its properties, apart from nutritive and medical significance, raspberry is particularly important for our country in social and economic terms, since the export thereof attracts inflow of foreign currency. However, raspberry is extremely sensitive to external influence. Accordingly, to ensure continuous and high quality offer of fresh and processed raspberry fruits throughout the year, both on domestic and foreign market, it is essential to preserve fruit quality for as long as possible. Modern fruit growing is therefore unimaginable if adequate capacities enabling the after-picking fruit preservation are lacking. Although there are numerous modes available with regard to the matter, freezing has so far been one of the best and most commonly used one. The quality of raspberry fruit after cold storage plants depend on: the variety, technical properties of the cold storage plant. Considering the fact that the quality of raspberry rapidly decreases after picking, the knowledge and the use of modern technology of the entire process, from picking to storage of fruit in cold storage plants, especially rational organization and realization, is of utmost importance, which ultimately reflects on the reduction of costs.

The results of this research show that the raspberry fruit repurchase, transport and storage costs range from 185.3 to 206.2 RSD (from 1,6 to 1,8 EUR) per kilogram, exclusive of storage (store-housing). To this one should add store-housing costs ranging from 1 to 1.50 RSD, (from 0,009 to 0,013 EUR) per kilogram on a monthly basis.

Therefore, modern organization of production and communication between producers, re-purchasers, processors and exporters is essential in order to decrease fluctuations in repurchase and sales price of fresh raspberry and its products and the improvement of overall financial effect of all links within the chain of this economy activity.

Considering the above, we may conclude that cold storage plants, even if of minor capacities, are preferential not only for the immediate participants in the producer - buyer chain, but it also makes an important stimulating factor for rural development

and economy of the country in general.

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ORANIZACIJA I TROŠKOVI OTKUPA, TRANSPORTA, SKLADIŠTENJA I ČUVANJA PLODOVA MALINE

Branka Kalanović-Bulatović[7], Bojan Dimitrijević[8], Dušan Milić[9], Zoran Milovančević[10]

Sažetak

Malina, zahvaljujući osobina kojima se odlikuje, pored nutritivnog i zdravstvenog, kroz devizni priliv koji se ostvaruje njenim izvozom, za našu zemlju ima i naročit društveni i ekonomski značaj.

S obzirom na činjenicu da kvalitet maline rapidno opada nakon berbe, od izuzetnog je značaja da čitav proces od berbe do skladištenja voća u hladnjačama bude racionalno organizovan, što bi u krajnjoj liniji trebalo da se odrazi i na smanjenje troškova i povećanje vrednosti proizvodnje. Iz tih razloga je predmet istraživanja u radu upravo organizacija čitavog procesa, od otkupa do čuvanja plodova malina u hladnjačama, kao i analiza troškova koji nastaju prilikom realizacije istog.

Podaci za izradu rada dobijeni su iz hladnjača koje se bave skladištenjem i čuvanjem maline. Za prikupljanje podataka potrebnih za izradu rada korišćeno je nekoliko metoda i to: metod posmatranja, metod intrvjua i metod analize sadržaja. Pored njih, u izradi rada, korišćene su još i metod analize, metod poređenja i metod kalkulacije.

Rezultati ovog istraživanja pokazuju da se troškovi otkupa, transporta i skladištenja plodova maline kreću se od od 1,6 do 1,8 evra po kg, bez čuvanja. Na to se dodaju troškovi lagerovanja koji se kreću od 0,009 do 0,013 evra po kg na mesečnom nivou.

Savremena organizacija proizvodnje, kao i komunikacija između proizvođača, otkupljivača, prerađivača i izvoznika, od presudnog je značaja za smanjenje fluktuacije otkupnih i prodajnih cena sveže maline i njenih proizvoda i poboljšanje opšteg finansijskog efekta svih karika koje čine lanac ove privredne aktivnosti.

Hladnjače za čuvanje maline, čak i one manjeg kapaciteta, nisu od koristi samo neposrednim učesnicima u lancu od proizvođača do kupca, već predstavljaju i značajan faktor podsticanja ruralnog razvoja i ekonomije zemlje u celini.

Ključne reči: *organizacija, troškovi, skladištenje, zamrzavanje, malina*

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ADJUSTMENT OF EU AGRICULTURAL POLICY TO THE NEW ENVIRONMENT

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Summary

The aim of this study is to examine the position of the EU in world trade in agricultural products. Emphasis is placed on identifying the influence tendencies of liberalization of international trade in agricultural products on the development and character of the reform of EU agricultural policy. The EU is the world's largest exporter and importer of agricultural products, and thus represents the most important actor in the global agricultural market. Due to the adjustment to the conditions of the world market, the EU seeks to increase the budget for rural development and the funds independent of production volume in the total budget structure, while the goal of improving the competitiveness of European agriculture will be a top priority.

Key words*: EU, "new environment", agriculture, common agricultural policy.*

JEL: *F13, F15, F55, Q17.*

Introduction

The agricultural policy of the EU includes numerous instruments and measures to encourage the development of the agricultural sector of European members. The objectives of this policy are: improving domestic agricultural production, protection from foreign competition, improving the living standards of farmers, equitable rural and economic development of countries, as well as the stabilization of the market. Measures of foreign agricultural trade policy must be compatible with the functioning of the domestic market, as well as with the requirements of the World Trade Organization (hereinafter WTO). WTO is the main institution that regulates the flow of international trade, especially agricultural trade system which is complex and still evolving (Francois et al., 2005).

The mechanism of protection of EU's agriculture constitutes a major obstacle in facilitating and improving foreign trade with other countries (integrations). The

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common agricultural policy (hereinafter CAP) of the EU means a system of agricultural protection, which is made up of a combination of mechanisms: defensive protectionism, which refers to the protection of domestic agricultural production and farmers' income, and attacking protectionism, which is done to encourage and provide exports support. In this way, the EU provides an increase in food production and meets the requirements in terms of constant availability of agri-food products.

Methodology and data sources

The aim of modern agricultural policy of the EU is adapting to new conditions. The EU has long been shifted from pricing policy to direct payments, which less influence on the modern trends of international trade. This paper examines the modifications of the agricultural policy in order that farmers produce freely, based on market principles and in accordance with market demands.

First, we will display characteristics of international trade in agricultural products and emphasize the importance of the EU from the perspective of world exports and imports based on data from the official publication of the European Commission (Overview of CAP Reform 2014-2020 - Agricultural Policy Perspectives Brief, Agricultural trade in 2013: EU gains in commodity exports, EU28 agricultural trade with: extra - EU28 and Member States Factsheets – Statistics of the EUROSTAT). The EU and the United States (USA) are by far the most important actors in this field. You will then see the main import and export destination i.e. major trading partners of this economic integration. Also, you can see the structure of trade in agricultural products the EU with other countries in various areas, in accordance with the methodology of EUROSTAT.

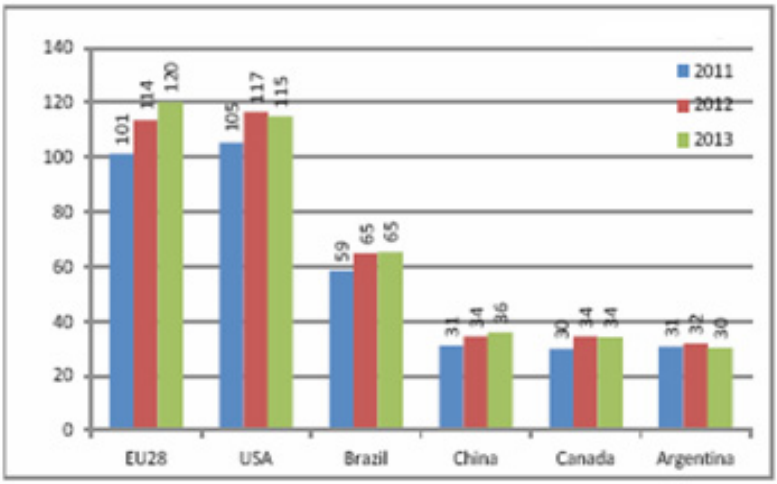
Development of the agricultural policy will be described since the beginning of European integration to the latest reforms include reduction of direct payments and price support in favor of the funds are opting for rural development. Researching period covers the entire period and the quantitative data relating to the period after 2003 or 2010, depending on the goal of analyses and data availability.

Characteristics of contemporary world trade in agricultural products

Trade in agricultural products is an important part of world trade. This trade is of special importance for developing countries, because they collect significant funds necessary for its industrialization and economic growth and development (Marković, Veselinović, 2015). Also, in these countries, agricultural products realize the highest share in total exports. Exports of these products tend to compensate for balance of payments deficit, which is caused by the increased imports of industrial and other products. On the other hand, some developed countries (primarily the EU) seek to delay the implementation of measures relating to the liberalization of international trade (McCalla, 2003). Along with that, there is pressure from the USA and other developed countries in order to promote the free movement of food in the world market. They want it to be no problem to sell these products to the European market.

In international trade, there is a specific relationship between developed and developing countries. Unlike developing countries that export mainly primary, cheap agricultural products, developed countries, because of the far greater development of the food industry, have benefits from this situation. In fact, they sold abroad more expensive agri-food products and products with higher level of processing thus attaining a significant benefit on the balance of payments. This leads to overflow accumulation in developed countries and improving their position in the international division of labor. In the structure of trade largest share exercise crops, livestock for slaughter and meat and meat products. This leads to a permanent increase in the participation of developed countries in world exports of agricultural products. The most important EU partners are the USA, Russian Federation and Switzerland, which in total exports of participating with 30%, while from the point of importation into the EU the most important partners are Brazil, Argentina and the USA, which have participation of 26% (Puškarić, Kuzman, 2014). The largest exporters of agricultural products in the world are the EU, the USA, Brazil, China and Canada (*Chart 1*). These results were achieved, among other things, thanks to measures of agricultural policy, primarily instruments of agriculture (tariffs, premiums, levies, permits, prohibitions, price policy, and credit policy).

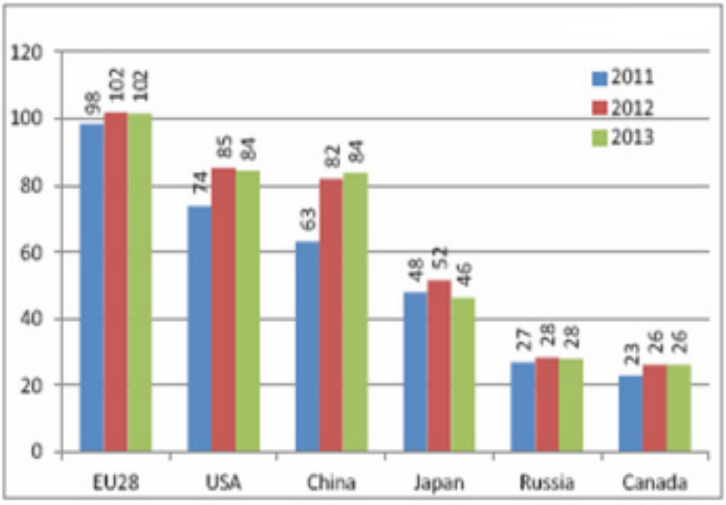
Chart 1 - Top 6 world agricultural exporters (€ billion)



Source: European Commission, 2014.

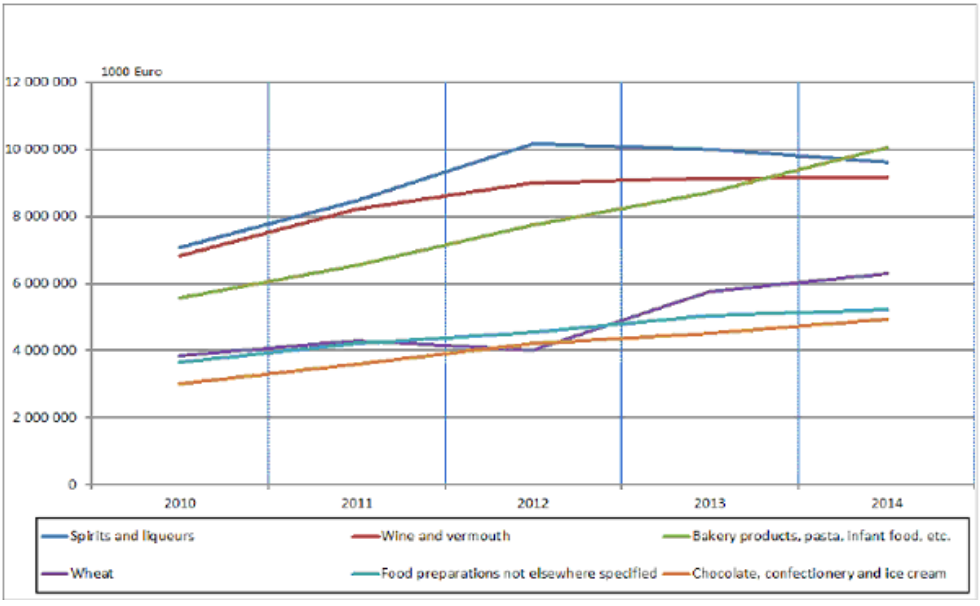
Besides the EU, countries with the largest imports are the USA, China, Japan, Russia and Canada (*Chart 2*). It is obvious that these developed countries significantly present both in imports and in exports of agricultural products. As the main reason may be the high income of the population in these countries. In fact, these countries want to provide a wide range of products to meet the discerning requirements of its customers. A secondary reason for the import of products is to prevent an increase in domestic prices due to excessive demand for these products. The main export products (average from 2010 to 2014) of the EU are shown in *Chart 3*, while the main import products for the same period are shown in *Chart 4*.

Chart 2 - Top 6 world agricultural importers (€ billion)



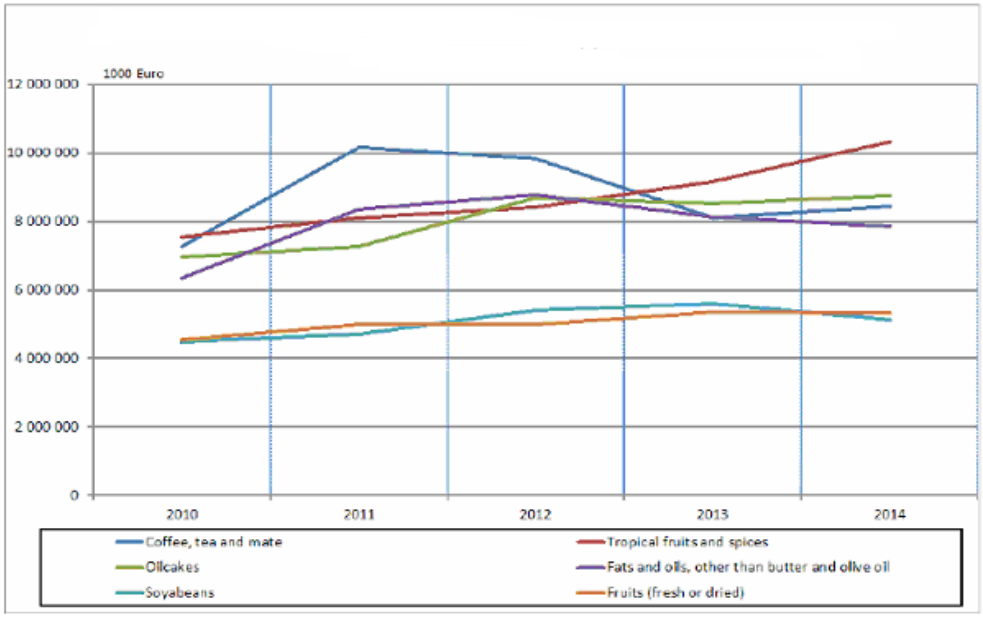
Source: European Commission, 2014.

Chart 3 - EU28 trade with extra EU28 2010-14 - Top 6 exported products: ranked by average 2010-2014



Source: European Commission, 2015.

Chart 4 - EU28 trade with extra EU28 2010-2014 - Top 6 imported products ranked by average 2010-2014



Source: European Commission, 2015.

EU in the negotiations on world trade liberalization

The process of international trade liberalization has progressed slowly because of the high level of protection in the field of agriculture. Talks have intensified with the establishment of the WTO, i.e. in the negotiations which are currently referring to this area of economy. The EU has done some concessions in terms of elimination of non-tariff barriers on some products and, in turn, lowering tariff rates (Božić et al., 2011). The intention was to significantly reduce tariffs. These requirements are primarily initiated by the USA, and other countries that are major importers of food.

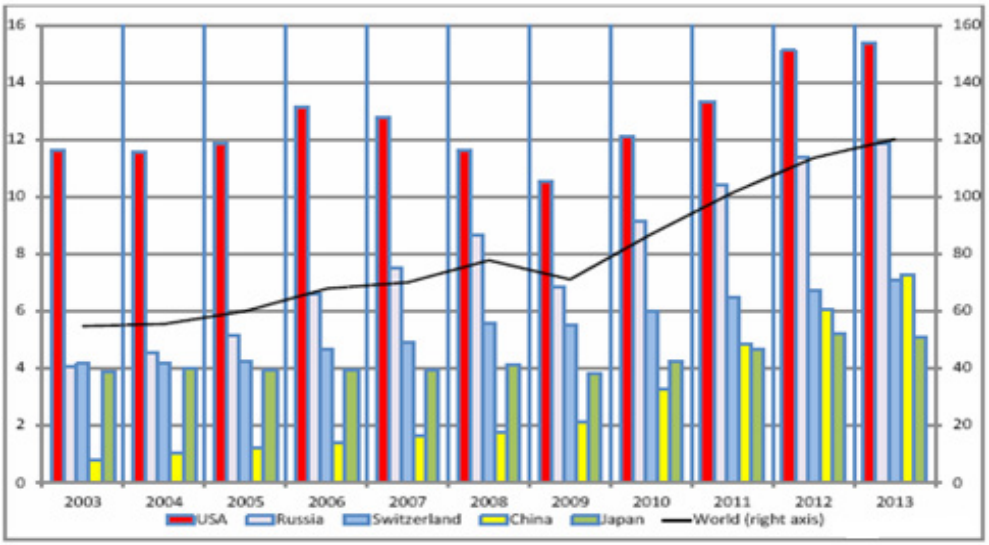
Defining rules for the liberalization of world markets for agricultural products was a significant result of the „Agreement on Agriculture". Each member country of the WTO negotiation process has created its own list of products as part of tariff concessions. The aim was to convert non-tariff barriers in the customs, in order to increase transparency and reduce discrimination. The main goal was to reduce non-tariff barriers to imports of agricultural products, as well as tariffs (Nasser de Carvalho, 2014). For model reduction is chosen linear model which included the same percentage reduction in height independently of the initial rate. Swiss formula, which implied higher rates of tariff reductions for products with higher tariffs, was rejected despite the efforts of some countries for its introduction (USA). The plan also envisaged the application of tariff quotas, which include the determination of the volume of imports of certain products within which will apply lower tariff rates. In the case of importing larger

quantities of agricultural products defined scope, customs rate increased. Under the „Agreement on Agriculture“ could be established quotas to ensure imports retained at the level of the base period of 1986 to 1988, and relating to the highly protect agricultural products in the base period. In addition to these, could apply the quotas of minimum approach, providing an opening markets to additional imports of at least 3% of the volume of consumption in the same base period of each product group (while in the period of implementation of additional imports must be increased to 5%) (Božić et al., 2011). The contract involves the special safeguard clause, which allows it to occasionally apply additional tariffs if import volumes growing rapidly, compared to the average for the previous three years and if import prices fall by more than 10% below a certain threshold level of prices. This clause is defined under EU pressure, because it is obviously reluctant watched the tendency of liberalization of trade in agricultural products.

At the WTO Ministerial Conference in Doha (Qatar) in 2001 began a new round of negotiations on the liberalization of world trade in agricultural products. This round of talks has continued implementation of the agreement established under the Uruguay Round. The effects of the „Agreement on Agriculture“ were modest. They marked only a partial liberalization of world trade in agri-food products. During the implementation of the agreement there has been some small progress because the tariff and non-tariff barriers gradually decreased, and over a longer period of time. It can be concluded that the protectionist measures still present in spite of the enormous efforts for their reduction. This did not suit the developing countries are still faced with the impossibility of free trade of their agricultural products in foreign markets. Production subsidies in the developed countries were almost not reduced. That is why developing countries are allowed to reduce production support for a longer period in which to implement all the results of the previous agreement in the WTO. However, harmonization flowed very slowly, and the proposals were not found adequate reception in some countries in the negotiation process.

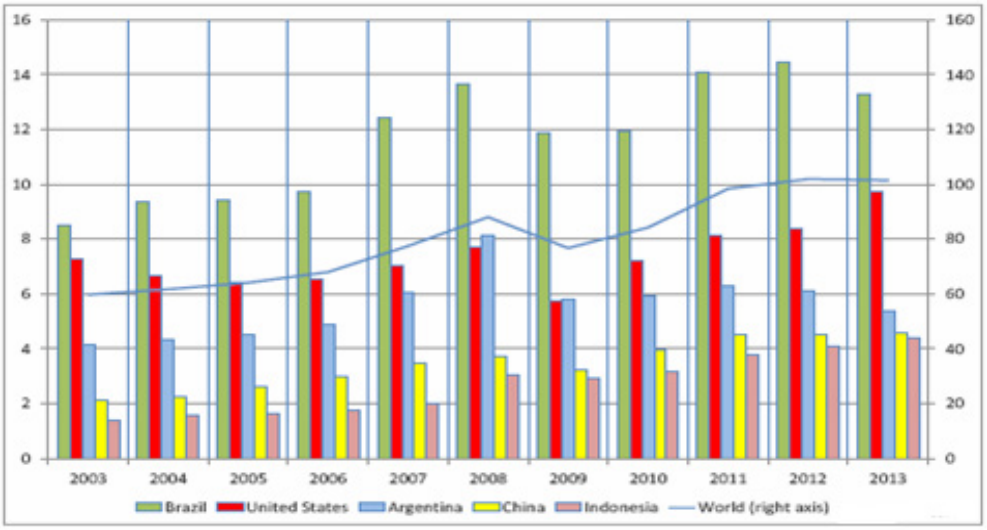
Due to a strong agricultural protectionism of the EU, the USA sought some radical reforms in the field of European agriculture. In this respect, the US advocated the reduction of tariffs on agricultural products, while the EU has sought to be a lower rate reductions and longer period of adjustment. The EU had to give in because they could follow some countermeasures which did not suit her, bearing in mind the importance of the USA from the point of import of agricultural products (*Chart 5*), and the possibility of further exports to the largest export market of the EU, and that is the USA (*Chart 6*).

Chart 5 - EU agricultural exports by destination (€ billion)



Source: European Commission, 2014.

Chart 6 - EU agricultural imports by origin (€ billion)



Source: European Commission, 2014.

Arguments for EU agricultural policy reforms

In the EU, roots of protectionist agricultural policy were conceived. Britain, France and Germany are the countries which have applied the state monopoly and a system of guaranteed prices. State monopoly is very important for the protection of domestic agricultural production to foreign, but also in domestic trade. The conditions of world

trade in agricultural products were worse taking into account the strengthening of the system of agricultural protectionism. Many countries faced with balance of payments deficit, particularly after World War II, have continued to establish more favorable economic relations with foreign countries. Agricultural protectionism has existed since ancient times, and "the real" is associated with the expansion of CAP European countries in sixties of the twentieth century (Marković, Marković, 2014).

Unlike defensive model of agricultural protectionism of the EU, in the USA was primarily implemented a model that favors the stimulation of exports through price policy, quantitative restrictions on imports and exports and commercial export programs. Most significant instruments of the EU trade policy are: a common external tariff, trade defense instruments (anti-dumping, anti-subsidy, regulation of trade restrictions, safeguards) and instruments for access to third country markets (Cvetanović, Jovović, 2010). Also, in the area of agriculture are also applied measures to improve the structure of placements, the combined market regulation with solid protective prices through intervention in the internal market, as well as special programs for areas with unfavorable conditions.

The introduction of the CAP was supposed to provide a safety net and preserve the agricultural sector from potential collapse of what they have experienced in some countries, i.e. Argentina in 1950 (Njegovan, 2006). The first attempt to formulate a common policy is the initiative came from the agriculture ministers of the Netherlands and France. France was interested in the export of almost all agricultural products, and the Netherlands for export-oriented production of fruit and vegetables. Rising costs of subsidies and threatening competition from overseas countries has led to negative implications for agricultural activity of certain European countries. The basic principle of agricultural policy was the creation of a single agricultural market within which there is free circulation of agricultural products. The basic aim was to establish a common policy in order to prevent unfair competition from abroad and enable a unique approach to the market by third countries. At that time, progress has been made in the production and mutual cooperation as Western European countries, to the formation of the European Economic Community, applied individual models of agricultural policy. Through specialization in production and the creation of a common market of agricultural and food products in EU, the objectives of agricultural policy of all the associated countries were achieved.

The main reasons for the occurrence of CAP are:

- Balance of payments impact (by reducing imports and increasing exports which can result in positive effects on the balance of payments),

- Stabilizing effect (reflected in the provision of reasonable income for producers and balancing supply and demand of agricultural products in the market),

- The effect of self-sufficiency (the goal is to reduce dependence on imported food products bearing in mind that one of the basic functions of agriculture ensuring food security, as well as the constant availability of food).

By creating a common policy in the field of agriculture, it is established a customs union of the original six countries. It was defined by the Treaty of Rome, which presupposes the elimination of all duties and quantitative restrictions between member states and the introduction of a common customs tariff to third countries. It is built concept of common prices, the competitive rules and standards harmonization. The mechanism of protection of domestic agricultural production was based on the protection of European market from excessive imports. It should be said that the agricultural protectionism of the EU was much stronger and in relation to the closure of other countries such as the USA, which more attention directed towards encouraging exports.

All the reform of EU agricultural policy had (among other things) target a gradual reduction of high protective measures (Huan-Niemi et al., 2009). The need to reform the CAP is followed as a result of pressure from inside (due to demonstrable weaknesses in previous policy) and external pressure, i.e. approaching common solutions in the context of the WTO (Marković et al., 2012). The objectives of the reform of the CAP in 1992, as part of a new strategy of agricultural policy, were: the achievement of greater competitiveness of domestic agricultural production in the world market, preventing unnecessary accumulation of agricultural products through the matching of supply and demand, the use of the agricultural budget to finance individuals so that provide long-term binding of farmers living in rural parts of the EU and improving the social and age structure of the population in the country (Marković, Marković, 2014). The plan was to decrease the intervention price and compensations for the abandonment of production and the establishment of agricultural environmental movement. The task was to eliminate the aforementioned disproportions, not just because of "internal" reasons, but also due to the start of the Uruguay Round negotiations in the context of creating a market-oriented system of agricultural trade (Marković, Marković, 2014). It was anticipated reduction of subsidies for the production, domestic support and export subsidies. The costs of export support were decreased and those funds directed towards fostering rural development.

Reassessment reform was carried out due to the existence of many insoluble problems ("Agenda 2000"). The most important external factors that led to the implementation of this reform are: the growing demand for food in the world due to the drastic population growth, the Doha Round negotiations in the WTO and expected accession of new member states (Janković, 2009). Among the internal factors stood out: the risk of market imbalance and destabilization of the economy, the Amsterdam Treaty, which obliges EU member states to respect the various regulations and environmental legislation, as well as respecting the interests of consumers. "Agenda 2000" has led to a further reduction of prices (grain 15%, beef 20%), which offset the increase in direct payments and the establishment of the second pillar of the common policy (rural development) (Marković, 2009). This reform also includes the mechanisms of common market regulating. Primarily refers to the market policy and price policy. The common market of certain agricultural products is governed by regulations in order to establish a stable market. These regulations included a very heterogeneous measures and mechanisms.

Support the production of milk and sugar was based on the import protection, with oilseeds defensive protectionism is almost non-existent, in the production of grapes was applied import protection and direct payments, etc.

The last major and radical reform was made in 2003 (Fischler reform). The main elements of the CAP reform were:

1. The introduction of the single payment scheme independent of production volume. This direct payment replaces former numerous types of direct payments. The aim was to strengthen the position of the EU in negotiations within the WTO and commitment to farmers to produce according to market demands. This would provide to farmers in the EU increased competitiveness and stability of income. It was expected to promote sustainable agriculture taking into account both economic and environmental criteria.

2. Limited retaining elements of production-related payments. It was necessary to prevent the abandonment of certain production that can lead to disturbances in the market of agricultural products. In particular, this applies to cattle and sheep production, which is linked to the hilly and mountainous areas and the need for their maintenance.
3. "Cross-compliance requirements." This mechanism is the obligation of the manufacturer to meet certain conditions if they want to get support through direct payments. This mechanism was related primarily to preserve the health of humans, plants and animals. According to the classification of agricultural support measures WTO, such payments fall under the so-called green package, or green box, which means that they do not cause distortion in the relations between the EU and its trading partners (Jevđović, 2013). Swinbank and Tranter (2005) point out that payments made under the green box are not subject to reduction in the negotiations because it does not directly affect or have a very little impact on agricultural production.

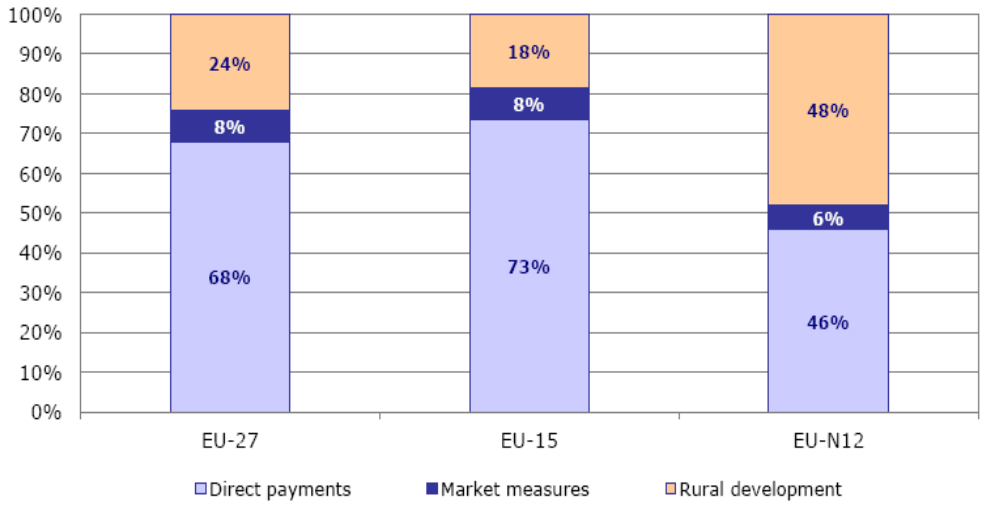
4. The introduction of modulation. Modulation is to achieve a better balance between the first and second pillars. Modulation provided the funds for rural development.
5. The mechanism of financial discipline. In order to prevent excessive spending, it is introduced strict financial control and the obligation to respect the limits of the budget.

The European Council in 1997 adopted a document "Partnership approach" which defines a unique strategy of approach and the measures that candidate countries are required to meet to join the EU. Most of the new member states opted to support the market and the prices (high tariffs) as the leading instrument of foreign trade protection. It is defined by a transition period to the country gradually adapted to CAP. The net providers of funds in a common budget (Germany, Britain, Sweden, the Netherlands and Austria) were against support through direct payments. But a common policy had to take account of farmers from new member states in order to maintain production potential. In order to use these funds it is necessary to fulfill certain conditions regarding the modernization of its agricultural sector.

Milk production after the reforms are characterized by asymmetric reduction of price, until the quota regime maintained (applied) by 2015. In the sector of grain, intervention

prices, as a mechanism for regulating the market stability, there is a further, but it is reduced monthly payments for storage of those farmers who produce wheat. Reform of the sugar sector has been initiated, inter alias, by the fact that the EU has a very complicated system of production quotas that motivated manufacturers to produce over quota, which required the overproduction of which is spilling over into the global market, and due to the significant export subsidies (1.5 up to 2 billion euros annually). An important package of measures came into force in 2006, containing: Reform of the Common Market Organizations of sugar in order to encourage competitiveness and market orientation in the sector; restructuring of the sugar industry, encouraging uncompetitive sugar producers to leave the production; providing direct income support to producers of sugar beet. The essence of the reforms was a reduction in the guaranteed minimum sugar price, the establishment of the reduced quotas by countries or regions and penalties for exceeding production. It was introduced as a discouraging treatment of certain arable land in order to gradually decreasing considerable level of land and natural environment degradation. In the following period, CAP and measures of agricultural protectionism will continue to lose its exclusive i.e. narrow agricultural character. The share of the agricultural budget in total EU budget will continue to decrease; due to adjustment to the conditions of the world market will tend to continuously improve the competitiveness of European agriculture. That means increasing food supply, environmental protection and increased protection from bad weather conditions (Witzke, Noleppa, 2010). *Chart 7* shows the distribution of expenditures for financing of agriculture (average for the period from 2008 to 2013) for the following categories: direct payments, market intervention and rural development.

Chart 7 - Distribution of CAP expenditure (2008-2013)



Source: European Commission, 2015a.

Much more attention will be devoted to the environment and natural resources. The new policy for the period after 2013 will have the following priorities: viable food

production, limiting measures of agricultural protectionism (to discourage imports, export promotion and support to individual farmers), organic farming, the use of clean or "green" technologies, and greater support to farmers in rural areas and solving of their social problems (European Commission, 2013). All this is in line with the objectives of the new strategy in the EU, such as the strategy "Europe 2020". So shall be the shift towards the fulfillment of a number of different social and environmental objectives through mechanisms that are significantly separated from production (Cvijanović et al., 2011). Projections suggest that the largest decrease suffer export subsidies, inventory management activities and mechanisms of state intervention.

Conclusion

Agricultural policy of the EU has succeeded in meeting its objectives, to provide quality and safe food at reasonable prices and to transform itself from a net importer to a net exporter of agricultural products. Also, it is established acceptable mechanisms of transport in the markets of the most developed European countries. The foreign trade policy of the EU has been the initial driver of its economic prosperity. Practice shows that due to the tendency of liberalization of world trade and the process of globalization of the world economy, protectionist measures slowly lose their importance. Today at the forefront are some other objectives, which are mainly related to sustainable development of agricultural production.

EU agricultural policy has undergone a series of modifications. The reforms were caused by both internal problems and pressure from individual countries for restricting free trade in connection with the importation into the EU market. External pressures are coming from the USA, Britain, and were implemented by the WTO bearing in mind the negotiations on the liberalization of international trade in agri-food products. Negotiations were initiated primarily by the USA that required a significant reduction in the level of protectionist measures, while the EU was not ready to commit significant concessions. Despite opposition from some European countries, EU agricultural policy has had to adapt to the new environment. The EU has had to gradually reduce their protectionist measures in the field of agriculture in the negotiations on the world trade liberalization. The manufacturers now produce in accordance with the needs and demands of the market, unlike the earlier policy of subsidies for certain production.

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PRILAGOĐAVANJE AGRARNE POLITIKE EVROPSKE UNIJE NOVOM OKRUŽENJU

***Milan Marković*[2]**

Rezime

Cilj ovog istraživanja jeste da se sagleda pozicija EU u svetskoj trgovini poljoprivrednim proizvodima. Naglasak se stavlja na sagledavanje uticaja tendencije liberalizacije međunarodne razmene poljoprivrednih proizvoda na razvoj i karakter reformi agrarne politike EU. EU jeste najveći svetski izvoznik i uvoznik poljoprivrednih proizvoda, pa tako predstavlja najznačajniji akter globalnog agrarnog tržišta. Zbog prilagođavanja uslovima svetskog tržišta, EU nastoji da poveća budžet za ruralni razvoj i sredstva nezavisna od obima proizvodnje, u strukturi ukupnog budžeta, dok će cilj unapređenja konkurentnosti evropske poljoprivrede biti na vrhu prioriteta.

Ključne reči: *EU, „novo okruženje", poljoprivreda, zajednička agrarna politika.*

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Review article

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POSSIBILITIES OF PLUM CULTIVATION IN THE REPUBLIC OF SERBIA

Milutin Matković[1]

Summary

Cultivation od plums has always been one of the most important parts of Serbian agriculture. In modern Serbian history cultivation of plums is among main parts of it's economy, being one of the first export products of modern Serbia.

Agriculture is marked as one of the motors of revitalization of Serbian economy. Plum is the most common Serbian fruit species. Serbia is in top five countries with area under plum. Western Europe has biggest market for plum and products of plum in the world. Serbian plum export is insignificant. Serbia has the potential to become a regional leader in plum export. Variable results in plum cultivation states the plum cultivation needs modernization in every aspect in order to achieve modern level of cultivation of plums.

In order to revive plum cultivation and make it profitable for export, comperhensive action which includes all relevant factors is nededed. This article will try to give insight in state of cultivation of plums and suggest posible guidelines in it's revitalization.

Key words: *cultivation, plums, development, export, revitalization*

JEL: *Q130*

Introduction

Serbia has great potential in agriculture. During modern time history it has mainly been recognized as agricultural country. One of the most important products of Serbian agriculture is plum.

Plum growing in among oldest agricultural disciplines in Serbia. Of all fruit trees in Serbia more than 50% are plum trees. In the modern historie there were times when plum was only Serbian export product. For decades dryed plum was one of the best seling export products of Serbian economy. Today Serbian plum export is so low that it is irelevant in economic terms.

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Thare are many problems in plum cultivation in Serbia today. Sorting, mehanization, metods of cultivation, alteration, storage, are amongst other, problems that needs to be deald with if plum is going to become considerable export product of Serbia.

Since it is national goal to establish Serbia as profitable and recognisable agricutural country, cultivation of plums should be one of the main ways of acheveing those goals, not only because of it's importance in the past, but also for great potential that lies within. All of this won't be possible without proper state guided vision and strategy, that will make path for revitalization of plum cultivation in Serbia.

Methodology and data sources

Analysis of variance and models of linear trend were used for cultivation analysis, while for comparing of Serbia and other countries comparative method was used.

For need of this article data from several sources were used, books concerning plum cultivation, statistical sites of world organizations, bulletins from conferences about plum held in Serbia, as well as scientific journals, in order to gain more comprehensive picture of place that plum cultivation of Serbia has today.

Goal of this article is to show strengths and weakness of Serbian plum cultivation, and to point to the possible ways of improving plum cultivation. This article will try compare state of Serbian plum cultivation with state of cultivation of plum in region and other significant plum cultivating countries.

Production

Of all areas harvested with fruit, 67% goes on stone fruit, two third of which are areas under plum. In overall annual production of fruit in Serbia stone fruit participates with 57%. Orchards in Serbia occupy 4.8% of area under agricultural land. More than 50% of that is plum orchards. Number of fruit crops for consumption in fresh state is low (Keserović et al., 2012).

Cultivation of plums faces many problems in Serbia today, seedlings, plum variety, cultivation methods, mechanization, production stagnation, decline in yields, age of trees, inadequate orchards…

Main problem in cultivation of plum in Serbia is extensive production, which characterize low level of agricultural techniques and low yield (Keserović et al., 2012). More than 50% of plum crops are grown extensively.

Serbia holds second place (table 1), after China, with 158.000 ha under plum trees, which is 6.24% of total world area under plum. It can be seen from Table 1. that Serbia has double of more area under plum than countries in region, and holds first place in Europe, whit Bosnia and Romania, far behind with 79.000 and 67.478 ha. All the other countries in the region have less than 20.000 ha under plum.

Table 1. Participation of countries in the structure of surface under plum

Country	area in ha	area in percentage
China	1,752,675	69.2
Serbia	158,000	6.24
Bosnia and Herzegovina	79,000	3.12
Romania	67,478	2.66
Turkey	20,468	0.80
Bulgaria	17,776	0.70
Italy	11,636	0.45
Hungary	5,700	0.22
Germany	3,863	0.15
world in total	2,531,479	100

Source: fao.org, 2014.

With average annual production of 400.000 ton(t), Serbia is in third place among plum producers in the world, behind China and Romania.

Table 2. World plum producers

Country	annual production (t)	production in percentage
China	6,022,744	56.2
Romania	424, 068	3.96
Serbia	391,485	3.65
Turkey	297,026	2.77
Italy	172,247	1.60
Bosnia	111,005	1.03
Hungary	43,268	0.04
world in total	10,702,774	100

Source: fao.org, 2014.

It can be seen in Table 2, that countries with significantly less area under plum, have similar annual production, which indicates that Serbia isn't using her full potential in

plum growing. Reasons for this state are several, main of which are extensive production and yield decrement in last several decades. For example Chile has 21.000 ha under plum and annual production for 2012 of 300.000 ton. In the region Romania has larger annual production average than Serbia, other significant producers are Italy and Bosnia, while other regional countries have minor production of plums.

Greatest problem of plum cultivation in Serbia is yield, which is in constant decline and beneath world average for 0.95 ton per hectare (t/ha). This puts Serbia in 62'nd place in the world and 27't place in Europe (Table 3.). Main reason for low results in yield is extensive production, that doesn't give possibility for modern cultivation.

Table 3. Yield of plums in t/ha for some countries

Country	yield in t/ha
Slovakia	25.45
Lebanon	16. 80
Italy	12.90
Greece	11.20
Serbia	3.2
world in average	4.15

Source: Čobrda*, 2005.*

This is an obvious indicator that Serbian fruit cultivation methods are surpassed. If untraditional plum cultivating countries such as Lebanon can achieve several times bigger yield, than it is understood that changes are needed if Serbia wants to revitalize plum cultivation.

Serbia has 39.530 million bearing trees, and this number is the parameter that is keeping Serbia among top producers in the world. But, on the other hand, number of trees is also decreasing. Serbia lost 25% of bearing plum trees in last three decades (Tables 4 and 5). Number of bearing trees decreased at annual rate by 0.59%.

Table 4. Number of bearing trees in Serbia (1980-2006)

Year	number of trees in 000
1981	49,839
1985	48,068
1990	46,395
1995	44,652
2000	43,104
2005	42,582
2006	41,796

Source: Matković, 2008.

Table 5. Number of bearing trees in Serbia (2007-2013)

Year	number of trees in 000
2007	41,796
2008	41,885
2009	41,601
2010	41,171
2011	40,822
2012	40,492
2013	39,530

Source: Republički zavod za statistiku, 2014.

Most of the number constitutes of old and utilized trees, ready for clearing. These results are indications that Serbia wasn't investing in plum cultivation in past thirty years. During that time cultivation of plums degraded to the level of small farmers, with few manufacturing plants and storage places.

Most famous plum sort of Serbia, *Požegača*, whit it's characteristic ideal for alteration is almost eradicated from Serbia. Biggest problems of this variety ware fineness of the fruit and intolerance to some fruit diseases. From this variety several hybrids were made, that more or less inherited its characteristic. Most common ones among them in Serbian plum variety are *Stanley,* Čačanska *lepotica i* Čačanska *rodna*. Institutes of Serbia created a number of hybrids, but all of them haven't proved profitable for large scale cultivation. There is also number of native sorts suitable for brandy making, along with some foreign sorts. In the past decade native brandy sorts are slowly being suppressed by earlier mentioned varieties.

Among fruit diseases the most dangerous one for plum in Serbia is virus called *Plum pox*,

detected in Serbia first time in 1928 year (Mišić, 2006). Since then it almost destroyed *Požegača*, till recently most frequent variety of plum in Serbia. During the struggle to overcome the influence of this disease several clones were made, but only some are tolerant to it, with rare clones resistant to disease (Paunović, Ogašanović, 2006). *Plum pox* virus has big impact on fluctuations of plum yield (Milošević et al., 2010).

Seedling production is one of the most important parts of revitalization of plum cultivation, because most of the plant needs replacement, also breeding of virus-free surface is equally important (Mišić, 2006). Further-more without vegetative surfaces modern style planting isn't possible (Milenković et al., 2006). Dominant substrate for plum in Serbia is native sort called *Džanarika*, with great type variety, proved unfit for modern cultivation (Nikolić, Rakonjac, 2007). In last decade, changes are made in cultivation techniques, spacing in planting decreases, number of plant in unit area is increasing, free formation of crown is being replaced with spindle formation (Milošević et al., 2008). If agriculture in Serbia want's to turn to intensive cultivation irrigation is the key segment for achieving that goal. From all the fruit corps in Serbia only 11% is being irrigated, mainly in Vojvodina. State of mechanization in Serbia is devastating, only 10% of tractors are less than ten years old, and more than 50% of atomizers are over ten years old (Keserović et al, 2012)

Over ninety percent of plum orchards in Serbia are in private property, and most of the orchards are in rural highland areas (Milošević, Petrović, 2000). Majority of private orchards contains of several smaller parcels, which makes difficult implementation of modern techniques of planting, circumcision, irrigation as well as use of modern mechanization. If there was possibility of usage of modern planting techniques, production of plum can be increased significantly (Glišić et al., 2006).

In comparative look over three main parameters for cultivation of plum in last couple of decades (Tables 6&7), which are number of bearing trees, annual production and yield per tree, uneven numbers shows lack of organized cultivation, which derives from bad cooperation between state and plum producers.

Table 6. Cultivation of plums in Serbia (1981-2006)

Year	number of bearing trees in 000	annual production (t)	yield per tree (kg)
1981	49,839	537,490	10
1985	48,068	327,370	6
1990	46,395	355,160	7
1995	44,652	216,250	4
2005	42,582	304,351	7
2006	41,769	556,227	13

Source: Matković, 2008.

Ending with year 2006, it can be seen that all three given parameters show grate variations, and number of trees is in constant decline trough entire sown period. Yield per tree shows biggest variation of 31.4% (Matković, 2008), which states poor state of cultivation level for this period. Numbers began to stabilize at the ending of given period.

Table 7. Cultivation of plums in Serbia (2007-2013)

Year	number of bearing trees in 000	annual production (t)	yield per tree (kg)
2007	41,885	680,566	16
2008	41,885	606,767	14
2009	41,601	662,631	16
2010	41,171	426,846	10
2011	40,822	581,874	14
2012	40,492	391,485	10
2013	39,530	738,278	19

Source: Republički zavod za statistiku, 2014.

In the last decade number of bearing trees continues to decrease, but production shows increase, which is still instable, because yield shows variation similar to the period given in Table 6.

As it can be seen it Tables 6&7 plum production in Serbia has great variations, which are result of unsupervised cultivation, without the use of modern growing techniques, but it also shows big unused potential, that represents good ground point for future development.

Most of fruit crops in EU are concentrated in southern Europe. Spain and Italy have almost 50% of all area under fruit, and of all fruit one sixth are apples (Eurostat, 2014).

Big producers of plum in EU are Spain and France with annual total of some 200.000 t.

Serbia and Romania are regional leaders in plum production, with similar annual production. If Serbia is to modernize production of plum fast, than it will be possible for Serbia to take the leading role in region, Romania has same production with two times less area under plum crops. Turkey has 20.468 ha of plum crops, and with usage of modern techniques, annual production of 300.000 t represents main rival for Serbia in region for cultivation of plums. Italy, on other hand has modern plum production, and with several times smaller areas under plum has annual average of 170.000 t, which stress importance of modern techniques usage in plum cultivation, Greece is another good example of usage of modern techniques with 15,700 t 1.500 ha, but Greece is small producer and doesn't represents threat for Serbian ambitions in plum cultivation.

Bosnia is another big producer, but with annual total of 111.005 t 79.000 ha, it is clear that Bosnian cultivation faces even bigger problems that Serbian. Bulgaria, Hungary, Macedonia, Austria, Croatia, Slovenia and Montenegro with their numbers in plum production, aren't competitive. Germany isn't big producer, but with annual average of 35.567 t, and with only 3.863 ha of plum crops, can be a good example of correct usage of modern techniques in plum cultivation (Table 8).

Table 8. Cultivation of plums in Europe for 2012

Country	area under plum in ha	total production
Serbia	158,000	391,485
Bosnia & Herzegovina	79,000	111,005
Romania	67,478	424,068
Turkey	20,468	297,026
Bulgaria	17,776	22,949
Spain	16,000	205,300
Italy	11,636	172,247
Croatia	6,700	14,580
Macedonia	6,400	35,444
Austria	5,975	71,915
Hungary	5,700	43,268
Germany	3,863	35,567
Slovenia	3,000	2,190
Montenegro	1,900	8,769
Greece	1,500	15,700

Source: fao.org, 2014.

It can be concluded that Serbia is among countries with obsolete techniques in plum cultivation, not only in terms of world plum cultivation, but also in the regional terms.

Processing of plums

In ever growing demand for organic food plum is among most wanted, due to her medically proven health benefit (Walkoviak-Tomczak, 2008). Duration of fresh plum season is usually less than 100 days. This states that alteration of plums is potentially very profitable part of plum cultivation.

There are three types of plum alteration:

- Warm processing, which is divided in:
  - production of dried plums
  - production of jams and marmalade
  - production of juices
  - production of concentrates
- Cold processing, which contains of:
  - freezing of whole fruit
  - freezing of hand-cut fruit
  - freezing of machine cut fruit
- Brandy production.

Most of the annual production of plum in Serbia is being processed. More than 80% of processed plum is used to make brandy, rest is being processed in several products. Germany, with annual production similar to Serbian, and Great Britain, which imports plum, make over 100 hundred plum products, while Serbia makes less than five. Advancement of processing of fruit enables more favorable production and economic results, compared with results in fresh fruit production (Lukač, Bulatović et al., 2012).

There are several reasons for this state: obsolete processed techniques, shortage of processing capacities, low demand of food industry for plum…

Dried plum is a rich source of numeral bioactive compounds, such as phenolic and flavonoids, providing numerous health benefits (Mehta et al., 2014). Dried plum processing has long history in Serbian production. Advantage of this type of alteration is that in can be used as final product, but also as semi-product for later procession. *Požegača* was mainly used for drying, because of her caracteristic. Drying was made in traditional hand-made dryers, whit usage of wood smoke. Today this technique is obsolete. In Serbia today thare are 340 industrialised dryers, around 350 mini dryers and some 5000 oldfashoned dryers. Main weaknesses are obsolete of tehnology and process of preparing plum for drying. Modern process of drying is achevable with better sortimentation of fruit sutable for drying, plantation suitable for mechanized picking, building modern dryers, and standadization of drying process acording with modern standards (Marković, 2000). Also, implementation of eco-fiendly ttechnologies is necessary for acheiving modern level of plum drying (Zlatanović, 2012). Variety of plum such as *Stenley, Požegača, Čačanska rodna* are most suitable for drying in Serbian sortiment of today, from which Čačanska rodna proved most profitable (Mitrović et al., 2000).

Annual production of dryed plum for past century in Serbia was around 20.000 t, while today doesn't go over couple of ton, from which of industrial production goes less than 5%. In annual processing of plum in Serbia dryed plum participate with less than 6%.

Other branches of warm processing like jam production are sporadical and minore in terms of profitability in current state of plum cultivation in Serbia. For most of warm processing products Serbia doesn't have suitablle tehnology.

Cold procession of plums developed in Serbia in last couple of decades. Serbian capacities today amounts 100 refrigerators of 3000 t, and 150 refrigerators of 1000 t (Keserović et al, 2012), most of which are thnologicaly obsolete (Janković, Mašović, 2000). But even this capacities aren't fully used, which leads to conclusion that Serbia has unused potential in this branch of processing. Also tehnology used for cold procession is obsolete, and without the usage of modern tehnologyes like MAP, which is packing tehnology that prevents contact with chemicals in process of conservation, export won't be possible (Janković, Stevanović, 2006).

Brandy production, of plum brandy caled Šljivovica, makes over 80% of pulm procession in Serbia. And from this number most comes from private manufacturers, that makes brandy for private consumption.

Annual production of brandy amounts 40.400 millions of litres for past several decades, less of 5% is high quality brandy. Here lies waste unused potential of Serbian plum production. More than 50% of all production come from varietys suitable for brandy making. There is a number of native variety used for brandy production, some of which proved suitable for high quality brandies, like variety called *Crvena ranka* (Nenadović-Mratinić et al., 2006). *Požegača* whit its caracteristic was most suitable for making brandy, but it is reduced on variety of local significanse today.

High class plum brandy, with established trademarks and protected origine, are rare amongst plum brandy in Serbia, some of them are:

- Žuta osa, maker „Flores", most famous Serbian plum brandy
- *Manastirka*, maker „Prokupac"
- *Baljevka*, maker „Srbijanka"
- *Stara sokolova*, maker „Bogdanović"
- *Povlenka*, maker „Povlen"
- *Suboborska šljiva*, maker „Jutra", made exclusive from variety *Požegača*

There is also a number of private manufacturers, that whit the proper branding can be competitive, both on domestic and export market.

Serbian plum brandy is most famous for its characteristic aroma and harmonical taste, but to make it competitive to leading world brands, much need's to be done. In bottleing process which takes three and a half years, changes are needed in picking varieties, planting, ways of harvest, fruit preparation, distilling techniques, techniques of brady ageing, standardization in botteling, brand making, to mention some of them (web.stat.

gov.rs/WebSite/Public/PageView.aspx?).

Another big problem is competitive ability of serbian food companies, that with unproductivness, inefficency, low level of technology and inadequate knowhow, can't match level of standardization needed for modern food production (Bešić et al., 2014). On the other hand, prepared fruit is among products that can increase Serbian chances of export possibilities (Ignjatijević et al., 2014).

Main problems of plum processing in Serbia are obsolete tehnology, lack of production capacities, poor segmentation in warm procession, which contains of only a couple of products, great participation of brandy making in total of processing, most of wich is for private consumption, and low number of final products.

Export

In modern state of Serbia, export of plum was always considered profitable. In fact, it was the first Serbian product to go on international market in year of 1867, 4.200 ton of dried plum.

Export of plum and products of plum stabilized in years after II world war, when Serbia had export on both East and West Europe market. After thitenig of regulation for export on West Europe market, and folowing end of Soviet union, Serbia lost boat of the markets, and revived its export in the mid-ninetes.

In renewed Serbian export, fruit participate with 17%, plum participate with 10% in fresh fruit export, and less than 1% in agricutural export in total. Serbia has determined cost for fresh and dried plum, boat uncompetitive. In last fifteen years world average for one ton of fresh plum were 650$, while Serbian was 188$ per ton, and for dried plum Serbian price was 1062$ per ton, and world average was 1798$.

Even so the export was revived, it never acheved former figures. Fresh plum export has follen from annual of 10.000 t to 650, dried plum from 30.000 t to 817, export of frozen plum fell from former 6.000 t to 3.500, but never the less is most profitable plum export product.

In years between 1996 and 2006, export of plum began to revitalize slowly, but it is still far from being profitable part of Serbian export (Table 9).

Table 9. Serbian export of plum and plum products (1996-2006.)

Year	quantity in t	value in 000 $
1996	5,980	2,772
1997	5,780	3,536
1998	7,143	3,462
1999	11,376	4,066

Year	quantity in t	value in 000 $
2000	11,785	4,529
2001	16,507	5,550
2002	9,225	3,948
2003	25,380	8,500
2004	19,039	9,393
2005	12,891	7,970
Year	**quantity in t**	**value in 000 $**
2006	26,838	15,383

Source: Matković, 2008.

It took almost fiften years for Serbian plum export in total, to obtaine export level of just one plum export product from pre-ninety's period. In last decade Serbian export continued to slowly revitalize, but annual totals are stil in rank of Srerbian export of dried plums in time of SFRJ (Table 10). Numbers stres absence of strategy in plum export.

Table 10. Serbian export of plum and plum products (2007-2010)

Year	quantity in t
2007	30,552
2008	22,690
2009	27,841
2010	22,248

Source: fao.org, 2014.

Dried plum export was, for a long time, one of the strongolds of Serbian export. During the past century, ending with 1990., export never fell under 10.000 ton per year, today particitates in plum export with less than 10%.

Frozen plum export is most profitable part of Serbian plum export in last twenty years, with participation of over 50%, and it is the product that keeps Serbian plum on the international market.

Export of fresh plum had significant results in the past, but it had never achieved stable figures, in order to bring steady income.

Plum brandy export had steady figures in seventies and eighties of past century, with annual export of over 1.000 t, but during the revival of export in mid-nineties wasn't renewed.

Serbian plum export is poorly segmentated, whith couple of product participating, with uncompetitive price and without cleat strategy for breaktrough on world market.

In the world market of plums, of top five exporters, Spain and Italy comes from Europe, Spain in in second place in the world in export of plum, and represents major competitor for Serbia in Europe, with average annual export of 74.000 t, Serbia holds sevnth place, infront of France, but after Netherlands, wich has symbolical area under plum and mainly trades whith it, Germany, Belgium, and Poland are also among major exporters, but with annual variations, and from region, besides Hungary, whose export shows grate variations, Turkey has stable exports, but whith under 5.000 t per year (Table 11).

Table 11. World exporters of plum (2007-2010), shown in tons

Country	2007	2008	2009	2010	2007-2010
Chile	105,055	85,853	95,057	74,533	360,498
Spain	82,221	89,263	88,537	88,892	348,913
USA	48,368	62,361	44,591	56,969	212,016
South Africa	43,742	49,283	56,883	46,409	196,317
Italy	38,712	41,218	40,360	56,569	176,859
Netherlands	34,567	33,474	36,131	26,218	130,390
Serbia	30,552	22,690	27,841	22,248	103,331
France	24,026	13,372	19,855	19,082	76,335
Poland	9,688	22,704	19,949	7,222	59,563
Hungary	7,945	17,011	17,011	17,572	59,539
Argentina	18,621	15,528	11,906	8,474	54,529
China	7,513	9,759	15,856	11,385	44,531
Germany	7,538	5,164	5,728	4,881	23,311
Turkey	3,498	3,170	6,137	7,678	20,483
Belgium	5,426	3,777	4,418	2,552	16,173

Source: fao.org, 2014.

Among top ten importers of fresh plum in the world for past five years are Germany, Russian Federation, China, France, United Kingdom, Canada, Netherlands, Italy, Belgium and United States, with two-thirds of total value of imported plum, for period from 2009. to 2013. Two major importers of plum are Germany and Russian Federation, boat increasin import of plums in last five years (trademap.org). From all of the major, sevan are from Europe, from teh markets were Serbia sold plum and plum products in the past. Today, Serbia has stable export in Russian Federation, but with much smaller volume. Nearness of major plum import markets must be used for improvement of Serbian export results. Many reasons exist for current state of Serbian production of plum, main of which are lack of financial support, low level of production techniques and technology, unsatisfactory control of brandy making process, as well as brandy selling, low purchase price and weak export possibilities (Ševarlić, 2000).

Conclusion

In order to revitalize Serbian plum production several steps shuld be made:

- Enactment of state strategy for revitalization of plum production, that will take into consideration state of plum cultivation in Serbia, world results in plum cultivation, compared state of Serbian and regional plum production, possibility of plum cultivation developmnet and achievable plase on international market for Serbian plum
- Adoption of agricultural laws that will stimulate cultivation of plum, among other Low on integral production, Low on seedlings production, makeing of Official fruit and winegrowing regionalization, Regulation for agricultural cooperation...
- Foundation of fonds for support of entrepreneurs, considering the fact that over 95% of plum corps are of private ownership and the capitlaist orientation of Serbian economy
- Introduction of new, better organized services for technical assistance, most of the owners of agricultural farms are aged and uneducated, futhermore, agricultural experts have little of practical knowlege
- Introduction of modern standards of cultivation and processon of plums, that will inprove state in cutltivation, wich will lead to several times bigger ressults in production, as well as further diversification in alteration of plums, enabling Serbia greather shance for export, and making her not only an exporter of fresh and semi-final products, but also of final produsts exporter
- Making marketing strategy for plum export, that will accurately estimate Serbian plum export chances, giving guidelines for chooseing profitable products, finding suitable markets, branding of star products, as well as making the price of Serbian plum products competitive in world scale.

Without inplemnetation of these steps it will be difficult, if not impossible, to obtain level of production needed for profitable cultivation of plum in Serbia.

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MOGUĆNOSTI PROIZVODNJE ŠLJIVE U REPUBLICI SRBIJI

Milutin Matković[2]

Apstrakt

Proizvodnja šljive uvek je bila jedna od najvažnijih grana poljoprivrede u Srbiji. U modernoj istoriji Srbije proizvodnja šljiva bila je jedan od važnih delova srpske ekonomije, narčito ako se ima u vidu da predstavlja jedan od prvih srbijanskih izvoznih proizvoda.

Poljoprivreda je označena kao jedan od motora revitalizacije Srbijanske privrede. Šljiva je najrasprostranjenija voćna vrsta u Srbiji. Srbija se nalazi među pet vodećih zemalja po površinama pod šljivom. Zapadna Evropa ima najveće tržište šljive i proizvoda od šljive na svetu. Izvoz šljive iz Srbije je zanemarljiv. Srbija ima potencijal da postane regionalni lider u izvozu šljive. Variranja u rezultatima proizvodnje šljiva pokazuju da je neophodna modernizacija u svim aspektima, kako bi se dostigao savremeni nivo u proizvodnji šljive.

Kako bi se oživela proizvodnja šljive i učinila profitabilnom za izvoz, zajednička akcija svih relevantnih faktora je neophodna. Ovaj članak će pokušati da da uvid u stanje proizvodnje šljive, kao i da predloži moguće smernice za njenu revitalizaciju.

Ključne reči: *uzgoj, šlive, razvoj, izvoz, revitalizacija*

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RATIO ANALYSIS SPECIFICS OF THE FAMILY DAIRIES' FINANCIAL STATEMENTS

Aleksandra Mitrović[1], Snežana Knežević[2], Milica Veličković[3]

Summary

The subject of this paper is the evaluation of the financial analysis specifics of the dairy enterprises with a focus on the implementation of the ratio analysis of financial statements. The ratio analysis is a central part of financial analysis, since it is based on investigating the relationship between logically related items in the financial statements to assess the financial position of the observed enterprise and its earning capacity. Speaking about the reporting of financial performance in family dairies, the basis is created for displaying techniques of financial analysis, with a special indication on the specifics of their application in agricultural enterprises focusing on companies engaged in dairying. Applied in the paper is ratio analysis on the example of a dairy enterprise, i.e. a family dairy operating in Serbia. The ratio indicators are the basis for identifying relationships based on which by comparing the actual performance and certain business standards differences or variations are identified.

Key words: *financial analysis, financial ratio, family dairy, management, financial performance.*

JEL: *M41, Q12*

Introduction

The challenges faced by agriculture - low selling price, rising production costs and other factors significantly affect revenues worldwide. The decline of traditional rural industrial branches, such as agriculture, mining and forestry in the past three decades have led the rural communities to explore and implement alternative ways of

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strengthening their economic base. The decrease in the capabilities of agriculture to generate sufficient income caused many farmers to seek new sources of income and to make the diversification of products.

If we specifically observe milk production, we will see the following: The world demand for milk and dairy products in recent years has increased from 2 to 2.5% per year, while demand for milk powder and whey powder increased by 30% over the period from 2010 to 2013. Stated as the key of the increase are the needs of developing countries and China. Dairy giants such as Tetra Pak in Sweden or GEA in Germany noted as well that the activity of their enterprises increased by 10% in 2012 (Geman, 2015).

Danish-Swedish company Arla Foods in 2012 achieved a production of 13.5 billion liters of milk and income of 9 billion euros, becoming the first company in the milk production in Europe, ahead of Friesland Campina in the Netherlands and Sodiaal from France. In 2012, Arla Foods has made a merger with Milch-Union, German leader in the production of milk, processing 1.3 billion liters of milk per year; also with a British company specialized in the production of cheese Milk Link; and more recently with the German dairy MUH. Arla Foods is building a huge factory for milk processing near London, which should produce more than 1 billion liters of pasteurized milk per year. However, as a lack of these mergers it has been observed that Arla Foods has to have a uniform price of milk i.e. the highest price among all the producers owned, so that, for example: the merger with the company MUH led to an increase in milk prices by 4 cents per liter in Germany. The projected growth in sales of dairy products in China for the period 2013-2018 was 8.5% for milk, although milk and dairy products are not part of the traditional Chinese diet. New Zealand has become a major player in the market of the so-called "white gold". France is the second largest milk producer in Europe after Germany and has already started to export to China. Chinese companies also invest in other European countries such as Germany, Ireland, Denmark, to ensure that their milk delivery and benefit from the international knowledge in the dairy industry that does not yet exist in China (Geman, 2015).

Alsos, Ljunggren, Pettersen (2003) point out that human capital as an important resource based on education or work experience is an important factor for starting new business activities. Pyysiäinen, Anderson, McElwee, Vesala (2006) are engaged in the research of developing the entrepreneurial skills of farmers and emphasize that developing the entrepreneurial skills of farmers was one of the Third Call tasks in the 6th Research Framework Programme of the European Union (McElwee, 2005).

Accounting performance measurement is essential for financial planning and control, which are the key activities of the management process in family dairies, for the realization of financial goals of the operation, as well as for motivating and controlling the activities of managers.

Methodology and Data Sources

The paper's aim is the consideration of the specifics of the financial analysis of the dairy enterprises and the importance of the obtained financial indicators for managerial decision-making, but also for assessing the realization by various stakeholders. The consideration of existing knowledge about the researched topic was carried out through a theoretical analysis, supported by data from domestic and foreign scientific and professional literature. The research was approached through the use of case study. Desk research method was used through the study of relevant literature in the part relating to the specificity of agricultural activities and application of basic technique of financial analysis (ratio analysis) in the case of enterprise operating in Serbia.

This research created the basis of *pragmatic contribution of the paper* in the field of application of financial indicators in the case of the specific enterprise. Pointed out is the importance of ratio analysis as one of the key techniques in financial analysis for monitoring the performance of dairy enterprises and thus indicated to management that they should particularly be focused on this field.

The first part of the paper is dedicated to reporting on financial performance in the family dairies. Presented after that are the techniques of financial analysis pointing out the specifics of their application in agricultural enterprises with a focus on companies engaged in dairying. This is followed by a practical example, the financial analysis of a local company which specializes in dairy production.

Reporting on financial performance in family dairies

Specifics of agricultural enterprises, which greatly affect both the financial statements of these companies and the analysis itself of the financial statements of these companies, are the following (Milošević, 1997):

- biological characteristics of the subject of work;
- climatic conditions;
- the structure and soundness of soil;
- incompatibility of the work process and production period;
- inseparability of production of certain products;
- production for their own needs, etc.

The specificity of agricultural activities is determined by a number of special features of financial accounting, on one hand, through the assets and results, and on the other hand, from the standpoint of specific documents that appear. Most of the business organizations involved in agricultural activities are relatively small, independent, usually family associations or family companies, oriented towards the cash basis of accounting, which often do not have the obligation to prepare financial statements. Moreover, the international tendency towards liberalization, a larger number of companies of international trade, as well as higher volume of investments, have an impact on the increase in enterprises in the field of agriculture, the area of change and

the commercial character of agricultural activity. The previously mentioned determines even greater need for the financial statements prepared respecting IFRS.

According to Argilés, Slof (2001), even in 2001 it was observed that there was a gap between the importance attached to the accounting and low level of accounting and bookkeeping practices in the agricultural sector. The reasons for this gap were poor adaptation of accounting rules to specific characteristics of agriculture and their difficult and expensive implementation. Despite the relative importance for the economy in many countries and growing links with other sectors, agriculture is traditionally not given much attention by researchers engaged in accounting (Argilés, Slof, 2001). On the other hand, it is generally believed that accounting can improve the management of agricultural enterprises and lead to achievement of better performances. Even Garcia, Sonka, Mazzacco (1983) in the research found that farmers drafting the financial statements could more easily make a projection of the cash flows than those who were not involved in financial accounting. Both the creditors', as well as the different needs of economic policy makers are also expressed through the needs for different information in the agricultural sector, in particular for accounting information. Thus, we can conclude that there are external requirements for accounting information in agriculture and that the information may also be useful to the farmers as well (Argilés, Slof, 2001). Besides that, Savić, Vasiljević, Đorđević (2014) discusses the challenges and specifics of cost management support for financial and managerial accounting in the agribusiness enterprises.

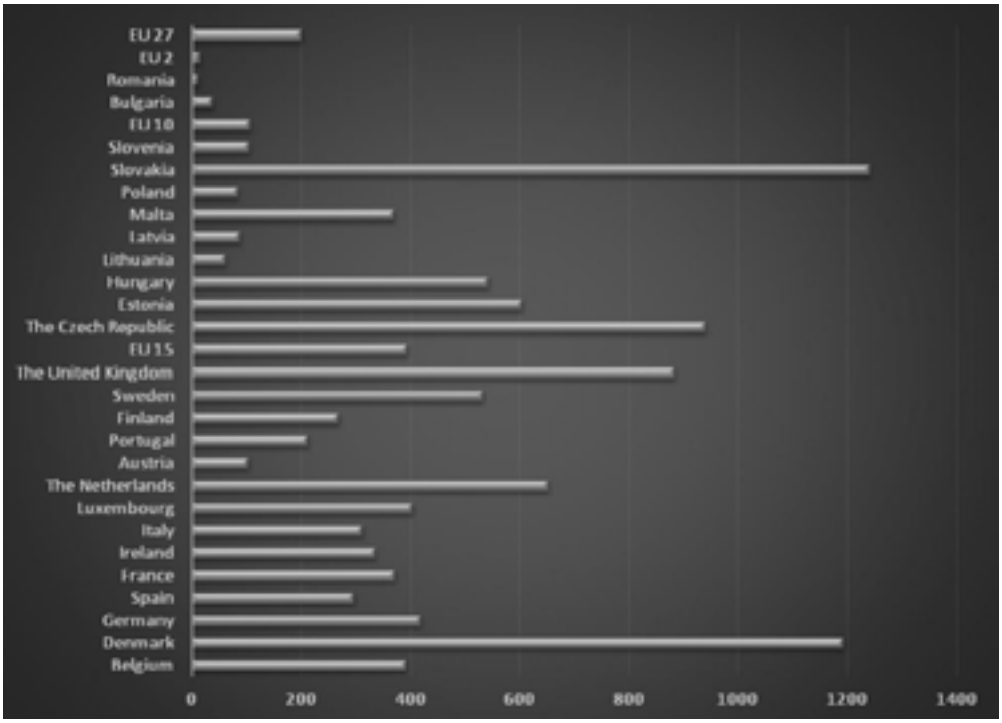
The Farm Accountancy Data Network (FADN) is a European system of testing the samples conducting every year the collection of accounting data from agricultural enterprises (farms), with the aim of monitoring the income and business activities of agricultural enterprises in the EU (European Commission, 2015). In addition, the FADN is an important source of information for understanding the impact of the measures taken under the Common Agricultural Policy (Vasile, Dorel, Mihai, 2015) in various types of agricultural enterprises (European Commission Directorate-general for agriculture and rural development, February 2014).

In EU Dairy farms report 2013 three different margin indicators are studied. The gross margin (over operating costs) is mostly applied in making comparisons with alternative types of production (labor, land and capital costs still have to be paid, regardless of the production type chosen). The net margin (prior to own factors) is calculated as the gross margin minus depreciation and external factors (wages, interest paid, rent). The net economic margin enables the assessment of the residual revenue (profit or loss) obtained from production, after remuneration of all production factors including imputed family factors (opportunity costs of family factors) (European Commission Directorate-general for agriculture and rural development, February 2014).

EU Dairy farms report 2013 in particular analyzes the structural information on milk specialized farms in the EU member states. The analyses source is EU FADN, Eurostat production statistics. Figure 1 and Figure 2 present the Milk production farms (tons)

and Share of national milk production for 2011 of the EU countries, except Greece and Cyprus for which the data are not displayed due to fewer than 15 farms in the sample.

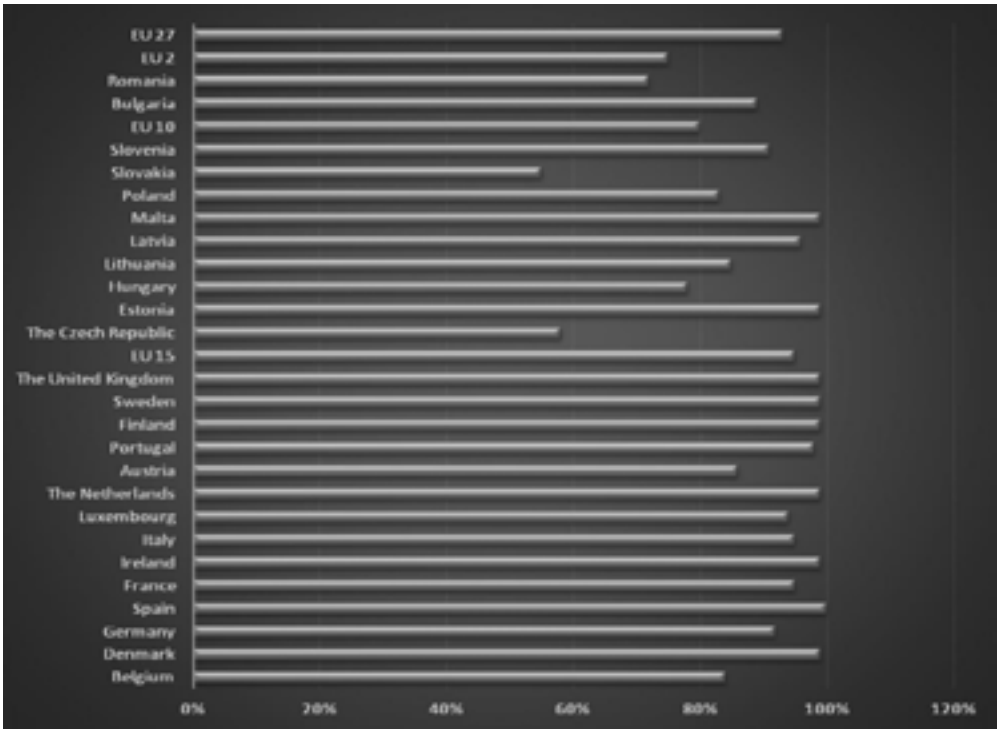
Figure 1. Milk farm production (tons) for 2011



Source: European Commission Directorate-general for agriculture and rural development, (February 2014)

The maximum amount of milk production/farm-tons in 2011 from all the EU countries surveyed had Slovakia and Denmark and it being in 1242 and 1193 farms - tons, while Romania had the lowest amount of Milk production/farm-tons in the same year, 14 farms-tons. Romanian market is dominated by 80% of small farms that are not competitive and the level of production is low (Chelmu, 2012).

Figure 2. Share of national milk production for 2011



Source: European Commission Directorate-general for agriculture and rural development, (February 2014)

If we observe Share of national milk production - % in 2011 in all EU countries surveyed (Figure 2), it is noted that 15 EU member states achieve far higher Share of national milk production -% compared to the EU 10 and EU 2. The greatest share of national milk production -% in 2011 achieved Spain (100%), while Slovakia and the Czech Republic recorded the lowest participation in Share of national milk production -%, 55% and 58% respectively.

Considering the official statistics of the Republic of Serbia, concerning changes in the number of companies and agricultural cooperatives and agricultural holdings in the period from 2009 to 2013, we realize the following: during the period from 2009 to 2011 there was a decreasing trend in the number of companies and agricultural cooperatives, and in 2012 this number was increased by several times (from 712 to 3000), while in the case of family farms in 2012 the number was reduced from 778891 to 628552 (Statistical Office of the Republic of Serbia (2015). In study of Vehapi, Šabotić (2015) identify the most important problems of Serbian agriculture, among others unfavorable ownership structure and low productivity.

Observing the milk production in the Republic of Serbia, also from 2009 to 2013, there was a downward trend in milk production in million liters from year to year, except in

2012, when the milk production compared to the year 2011 increased by 8 mill.litres (Table 1). The small farmers participate significantly in the total cow milk production in Serbia and their dominant position is a result of declining farms (Drašković, Rajković, Kostić, 2010).

Table 1. Milk production in million liters*****

	2009	2010	2011	2012	2013
Total	1489	1462	1445	1453	1432

Source: Statistical Office of the Republic of Serbia (2015)

*****Cow and sheep milk for human consumption and processing

Financial analysis techniques

The analysis of financial data uses a variety of techniques to evaluate the financial position of an enterprise. Techniques applied are - ratio analysis, common-size analysis, review of descriptive material and comparisons of the results obtained with other types of data.

Understanding financial ratios, it is possible to gain insight into the financial status of the company. Information from three key financial statements - balance sheet, income statement and cash flow statement are the basis for the application of ratio analysis. These financial measurements should be carried out every year in order to determine the financial progress of a dairy company. The companies that survive and prosper must have managers who use the tools of financial analysis to check the vital financial functions (Barnard, Akridge, Dooley, Foltz, 2012).

The *DuPont Analysis* was created by the DuPont Corporation in the 1920s. This analysis is one of the most popular techniques of identifying the strengths and weaknesses of a dairy enterprise. Low value of Return on equity relative to the average of the branch or its decline may indicate the appropriate problems or weakness. As potential sources of weakness within the family dairies the following can be specified: management inefficiency, poor cost controls, inefficient production or inadequate marketing. By decomposition of synthesized indicators weaknesses can be more accurately assessed, and significant information signals van be obtained to initiate appropriate actions by management to retrieve financial performance, which is illustrated in the following table:

Table 2. The DuPont Analysis - Family Dairy **X** and Family Dairy **Y**

Elements	Family Dairy **X**	Family Dairy **Y**
1. Operating profit margin ratio	0,29	0,11
2. Asset turnover ratio	0,20689	0,3909
3. Return on assets - ROA (1 x 2)	0,060	0,043
4. Interest expense to farm assets	0,05091	0,03247
5. Equity multiplier (EM shows financial leverage**)**	2,2	1,90
6. Return on equity - ROE (3 - 4) x 5	0,02 (2%)	0,02 (2%)

Source: Author's Analysis

Malinić, Milićević, Stevanović (2012) emphasize that asset turnover multiplies the effect of increasing the profitability of revenue to profitability of total investment in a company property. The attached table shows that both family dairies have 2% ROE. However, by applying leverage the DuPont system can be seen to have different sources of weakness. Family dairy **X** has a higher operating profit margin ratio while lower asset turnover in relation to family dairy **Y**. In addition, the Family dairy **X** has a higher leverage ratio (equity multiplier) than the Family dairy **Y** (2,2:1,90), and it is important to bear in mind the fact that corporate borrowing may lead to positive or negative effect on the profitability of equity capital.

To improve the assets turnover ratio, in the case of family dairy **X**, it is essential that the management of the family dairy undertake activities that will lead to higher production efficiency or improve the price level in the sense that it reduces the cost, and can also reduce current or non-current assets. Observing the profit margin as a very important financial indicator, for the family dairy **Y,** efforts are expected of management towards increasing production efficiency, improving the price level or reducing costs more than revenues.

It is not sufficient to say that one or the other dairy enterprise is more profitable than the other, but one must consider both the causes and factors that have likely opted for the decision. The objective of the analysis of financial statements is of great importance, because for example, one approach to comparing the two dairy enterprises will differ from the approach to the assessment of investments' profitability in the two enterprises. The management could use the financial reports to determine the enterprises' profitability.

In the financial analysis standards are used that were created on the basis of experience, respecting the particularity of certain industry and they were modified from time to time with changes in business conditions of dairy companies or companies that operate in another industry. The standards may be ideal or average, or normal achievements to be achieved under certain conditions. Due to the variable nature of the standards, constant learning about conditions under which they were established is essential, so that the causes of deviations from the standards must be respected. The standard relations provide a benchmark for comparison and significance of calculated ratio numbers can be understood only when compared with another ratio, and thus we can speak of four types of standards (Kumar, 1985):

- **Absolute standards:** - These indicators represent certain rules, for example, in case of ratios of general liquidity where the orientation norm is ratio 2:1.
- **Historical Standards:** - These indicators represent the previous ratios of surveyed dairy companies. Comparison with historical standards is also known as the "trend analysis".
- **Horizontal standards:** - These are average indicators calculated for the entire dairy industry or for comparison between the two companies. Comparison within these standards is a complex issue because of the difference in size of the observed companies, the accounting policies that were applied and defined objectives, regardless of the companies operating in the same industry.
- **Budget Standards: -** These standards are based on the budget and are applied so that the actual ratio figures are compared with budgeted indicators, thus making them useful for internal management in the function of performance evaluation and control in dairy and other enterprises.

A practical example: Ratio and SWOT analysis of the enterprise: "Family dairy Veličković"

The family dairy Veličković has a long tradition in the production of milk and dairy products. The dairy now has 22 employees and processes about 5,500 liters of milk on a daily basis. From the purchase, processing and dairy production as core business, investing in modern technology, employees and cooperation with foreign experts their own line of products has been developed. Today in retail stores the company sells more types of products (yogurt, cream, cheese and sour cream). The structure of financing sources was as follows:

Table 3. Structure of financing sources for the years 2014 and 2013, Family Dairy Veličković, Surdulica

Financing sources	**2014 year**
Equity	55,83%
Long-term liabilities	14,99%
Short-term liabilities	29,17%
Total	**100%**

Source: Author's Analysis (Balance sheet, 2014)

Net sales revenue, gross profit and net profit grow in the current compared to the previous year, indicating a positive trend. However, for a more accurate evaluation, it is necessary to determine the quality of revenue and profits by comparing them with cash flow. Dairy additionally indebted in 2014 by taking a long-term loan at the bank to invest in a cooling chamber which affected the investing activities in the cash flow statement, as well as the financing activities; and a short-term loan to provide liquidity, which had been impaired due to problems in the inability to collect large amounts of receivables.

Table 4. Components of profitability for the years 2014 and 2013, Family Dairy Veličković, Surdulica in RSD

Components of profitability	2014 year	2013 year
Net sales	57.737.000	36.821.000
Operating income	1.336.000	1.165.000
Net income	537.000	414.000

Source: Author's Analysis (Income statement, 2013, 2014)

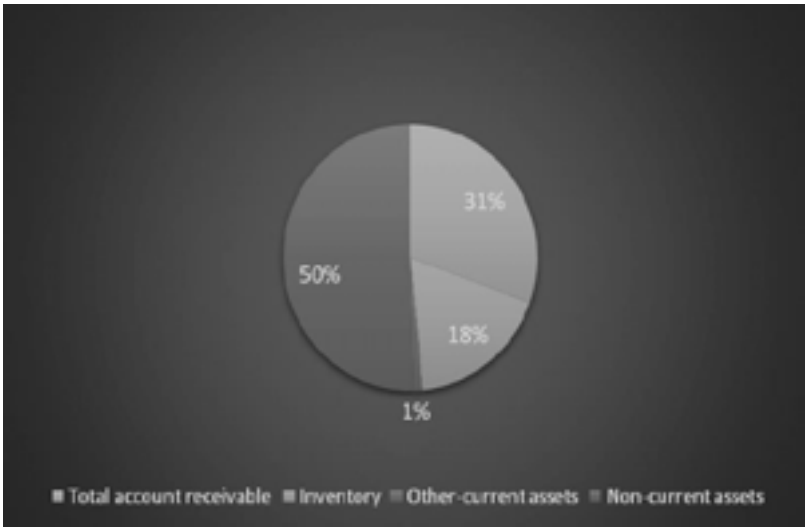
The increase was influenced by the growth of profit in current profit compared to the previous year and most of the paid off credit obligations.

The dairy generally applies strategy of low profit margins and high ratio of current assets. The reason for choosing this strategy is that the dairy primarily produces inferior products, while luxury products have a low share in the total range. The strategy is to produce dairy products that will be cheaper than the competing ones. This is relatively possible to realize, because as the comparative advantage can be taken - cheap labor, low transportation costs, cheap raw materials and more. In order to achieve as high profit as possible, it is necessary that the diary realizes economy of scale.

When it comes to luxury dairy products, which have less than 10% share in total production, a high profit margin and lower turnover ratio of these stocks is applied.

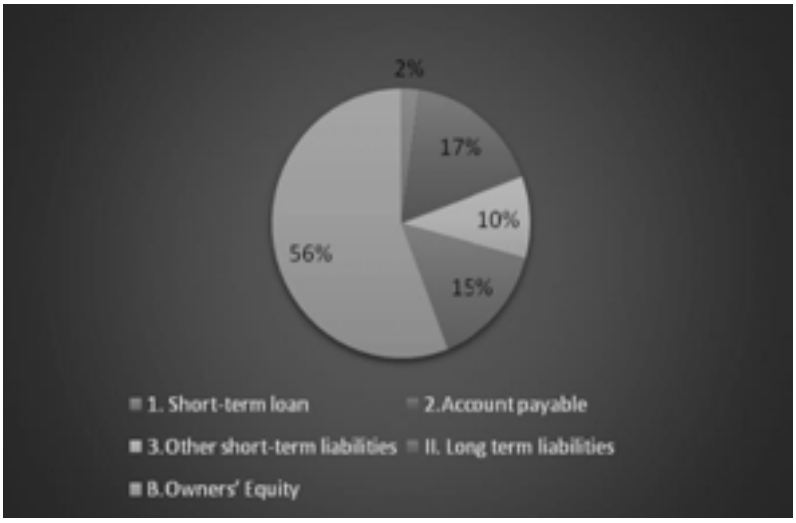
The structure of assets and their sources is presented below:

Figure 3. The structure of assets



Source: Author's Analysis (Balance sheet for 2014)

Figure 4. The structure of sources of assets, Family Dairy Veličković, Surdulica in RSD

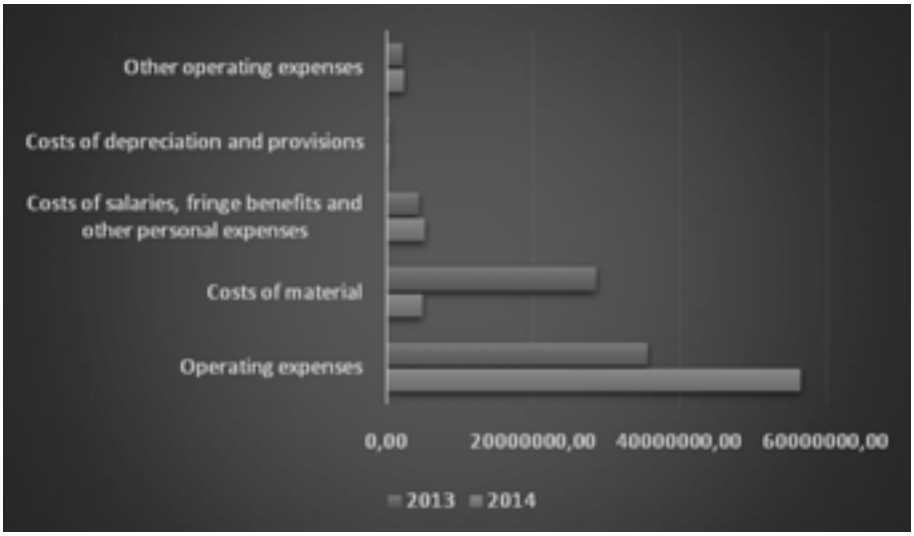


Source: Author's Analysis (Balance sheet for 2014)

In 2014 predominant in the structure of total revenues are operating revenues (almost 99%, Income statement).

Below is the structure of operating expenses showing that the material costs were the largest share in both years, and that in 2014 there was a growth of all types of operating costs compared to the previous year, which resulted in the largest extent due to the increased volume of business (Figure 5).

Figure 5. The structure of operating expenses in RSD



Source: Author's Analysis (Income statement, 2013, 2014)

Tables 5 and 6 show the loss of funding in both years, which in 2014 decreased due to lower burden of the dairy by interest obligations, and the difference between other revenues and other expenses, which is also negative in both years with an increase tendency of 12.74 %.

Table 5. The difference between financial revenues and financial expenses in RSD

ITEMS	2014	2013
The difference between financial revenues and financial expenses	**(100.000)**	**(131.000)**
% of change in difference between financial revenues and financial expenses	**23,66%-**	
Financial items		
in which: Financial revenues	**2.000**	**16.000**
Financial expenses	**102.000**	**147.000**
% change in Financial revenues		**- 87,5%**
% change in Financial expenses		**- 30,61%**

Source: Author's Analysis (Income statement, 2013, 2014)

Table 6. Profit/(loss) from other activities in RSD and % change

ITEMS	2014	2013
Profit/(loss) from other activities	**(699.000)**	**(620.000)**
% change in Profit/(loss) from other activities	**+ 12, 74%**	

Source: Author's Analysis (Income statement, 2013, 2014)

The most commonly used statistic liquidity ratios include the current ratio, quick ratio and net working capital to total assets ratio (Table 7). The following are the calculated values of ratios on the basis of which it is stated that the current ratio is below the reference norm of 2, and quick ratio as a more stringent test of liquidity is slightly above the reference norm of 1. Net working capital to total asset ratio represents the ratio providing information on the liquidity by showing the percentage of total assets the dairy carries as net working capital, which in the observed dairy is 20, 45% and the sole value of net working capital is positive and amounts to 2,957,000 RSD in 2014. The liquidity situation is generally satisfactory.

Table 7. Liquidity ratios

LIQUIDITY RATIO	2014
Current ratio	**1,70**
Quick ratio	**1,09**
Net working capital to total asset	**20, 45%**

Source: Author's Analysis (Balance sheet, 2014)

After the analysis of liquidity, the logical sequence is the analysis of long-term financial security (Table 8). Long-term creditors generally start from the point that their claims are safe to the extent in which a firm owns its own capital. In the observed case, only 44.16% of dairy assets are financed by debt. Conversely, the dairy finances 55,83% of its assets. Thus, the interest earned ratio serves as a measurement of available area between interest expense and earnings of the enterprise, a larger area indicates a greater degree of certainty in terms of collateral for long-term creditors, which for the observed dairy is 7 times.

Table 8. Long-term solvency ratio

LEVERAGE RATIO	2014
Liabilities / Total assets	44,16% (0,4416)
Liabilities / Equity	79,09% (0,7909)
Equity multiplier (Total assets/ total equity)	1,791
Time interest earned ratio	7 times

Source: Author's Analysis (Balance sheet and Income statement, 2014)

Further analyzed, is the efficiency of asset management and capital management called in the relevant academic literature turnover analysis (Table 9). More efficient management, primarily over current assets with a focus on inventory and accounts receivable, leads to faster release of cash that is necessary to pay short-term obligations to creditors, which significantly affects the liquidity. Kneževic, Fabris (2010) emphasize that unlike receivables where the collection for the most part depends on the buyer, the decision on the moment of paying to their suppliers is made by the management. It is important to bear in mind that the decision in addition to the agreed currency will depend on the current liquidity and naturally on the general strength and market position of the enterprise. It happens in practice that small and medium enterprises are endangered by delayed payments from large, powerful companies that settle their liabilities with a considerable delay and thus they are financed by free "overdraft". For a more precise interpretation of turnover ratios it is necessary to have information on reference norm for the industry in which the observed enterprise operates for comparison with its competitors. From the aspect of performance and safety, it is always better that the turnover ratio is as great figure as possible and the binding time of certain parts of the property as short as possible. Duration of inventory turnover was 16 days. The average collection period of trade receivables was 28 days and the dairy had liquidity problems due to the inability to collect the greater part of trade receivables, so the strategy was changed in the field of credit policy. Sales were diverted into new solvent customers and cooperation with insolvent customers was interrupted. In addition, the payment period is shortened, and to customers who did not respect the agreed deadlines, the delivery of goods was terminated till the payment.

Total asset turnover shows assets utilization efficiency. Every dinar invested in assets generated net sales of 3.99 dinars.

Table 9. Asset management ratio

ASSET MANAGEMENT RATIO	2014
Inventory turnover	**22 times**
Duration of inventory turnover	**16 days**
Receivable turnover	**13 times**
Duration of collection of receivables	**28 days**
Total asset turnover	**3,99**

Source: Author's Analysis (Balance sheet and Income statement, 2013, 2014)

In the context of the profitability indicators following, considered are - an indicator of profit margin, the profitability of total assets and profitability of its own capital (Table 10). The rate of return on equity (ROE) was higher than the rate of return on assets (ROA), which means it pays off to use someone else's capital (positive impact of financial leverage).

Table 10. Profitability ratios

PROFITABILITY RATIOS	2014
Profit margin	**93, 00794**
Return on assets(ROA)	**2,37324%**
Return on equity(ROE)	**6,65098%**
Financial leverage	**1,790934**

Source: Author's Analysis (Balance sheet and Income statement, 2013, 2014)

The logic of DuPont system of profitability analysis was applied as follows:

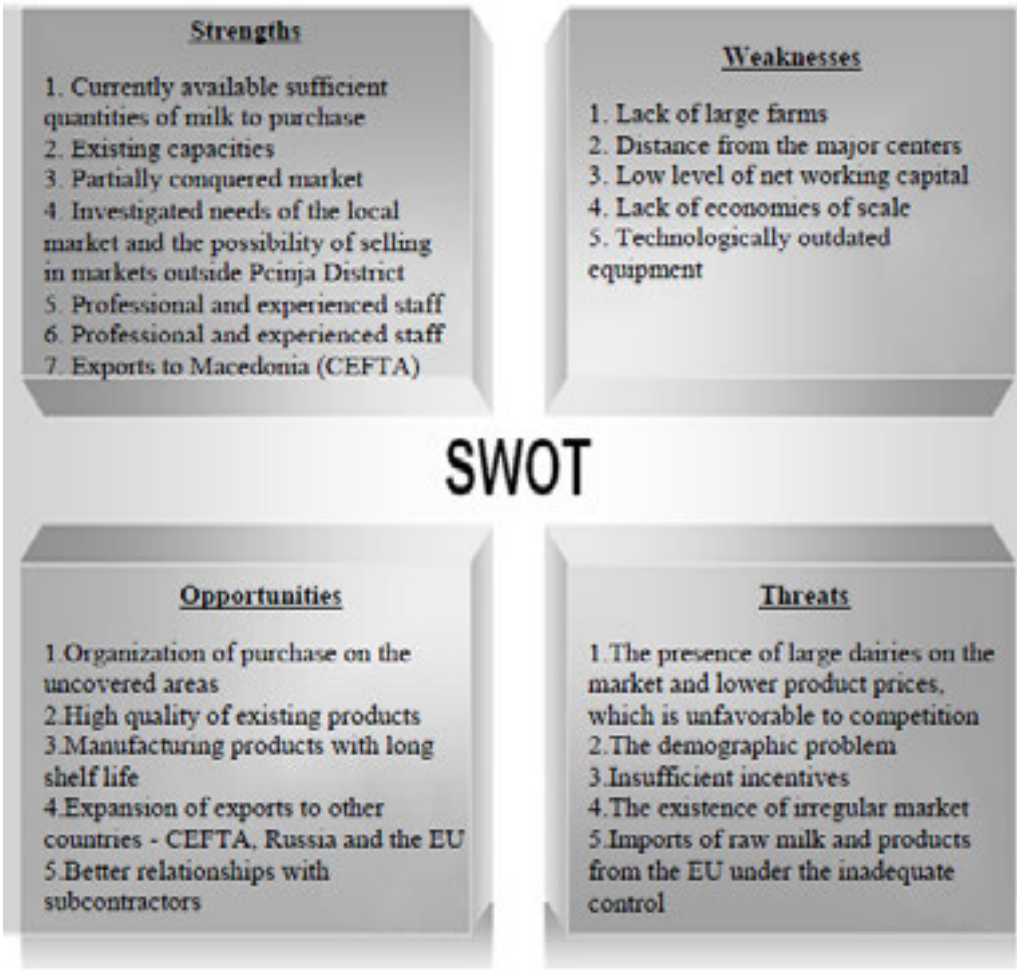
Table 11. DuPont analysis

COMPONENTS	2014
Profit margin	**93, 00794 %**
X Total asset turnover	**3,99**
X Financial leverage	**1,790934**
= ROE	**6,65%**

Source: Author's Analysis (Balance sheet and Income statement, 2014)

Given that dairy observed continuously examines the potential for new products, the paper also presents a SWOT analysis that can determine the likely risks and rewards, and find the most promising new market:

Figure 6. SWOT Analysis



Source: Author's Analysis

Based on the presented SWOT analysis it can be seen that there is a possibility of expanding the market beyond the local on which the observed family dairy operates and that is one of the key preconditions of acquisition of newer technological equipment.

Conclusion

Financial information is used to meet the following needs of agricultural enterprises for decision-making, as well as for financial reporting purposes. The financial statements of any agricultural enterprise provide a wealth of information for managers. In the financial statements useful information can be found, which are not obvious so that agricultural enterprises should have managers using the tools of financial analysis. Speaking about the reporting of financial performance in family dairies, the basis is created for displaying techniques of financial analysis.

External analysts usually use historical and/or horizontal standards. Accounting information is not focused only on financial performance, but also on the use of financial indicators which can be managed. In family dairies of any size and organizational structure, there is a need to monitor and present variety of different activities aimed at a common unit or measure. The effect of different activities can be aggregated into financial metrics such as revenue from sales, profits and costs that are used to compare the actual performance and evaluation of the financial status of the agricultural enterprises focusing on companies engaged in dairying. The *DuPont analysis* can be successfully used to identify the strengths and weaknesses of a dairy.

It is not sufficient to say that one or the other dairy enterprise is more profitable than the other, but one must consider both the causes and factors that have likely opted for the decision. Financial ratios cannot directly provide answers to important questions about the company, so this paper represent the basis for identifying relationships based on which, by comparing the achieved performances and certain business standards, the differences or variations are identified. After that, the management of the dairy is the one that should initiate appropriate actions that may lead to the correction of financial performance of dairy.

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SPECIFIČNOSTI RACIO ANALIZE FINANSIJSKIH IZVEŠTAJA PORODIČNIH MLEKARA

Aleksandra Mitrović[4], Snežana Knežević[5], Milica Veličković[6]

Rezime

Predmet istraživanja ovog rada predstavlja evaluiranje specifičnosti finansijske analize mlekarskih preduzeća sa fokusom na primenu racio analize finansijskih izveštaja. Racio analiza predstavlja središnji deo finansijske analize, jer je zasnovana na ispitivanju odnosa između logički povezanih stavki u finansijskim izveštajima radi ocene finansijskog položaja posmatranog preduzeća i njegove zarađivačke sposobnosti. Govoreći o izveštavanju o finansijskim performansama u porodičnim mlekarama, stvorena je osnova prikaza tehnika finansijske analize, sa posebnim ukazom na specifičnosti njihove primene kod poljoprivrednih preduzeća sa fokusom na preduzeća koja se bave mlekarstvom. U radu je primenjena racio analiza na primeru mlekarskog preduzeća, odnosno porodične mlekare koja posluje u Srbiji. Racio pokazatelji predstavljaju osnovu za identifikovanje odnosa na osnovu koga se poređenjem ostvarenih performansi i određenih standarda poslovanja, identifikuju razlike ili varijacije.

Ključne reči: *finansijska analiza, finansijska racija, porodična mlekara, upravljanje, finansijske performanse.*

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Review article

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RURAL DEVELOPMENT POLICY – A PERSPECTIVE OF LOCAL ACTORS IN SERBIA [1]

Ružica Papić[2], Natalija Bogdanov[3]

Sumarry

Key challenge in transitional countries is effective decentralized local governance with strong capacities for dealing with new rural development programming instruments. In this paper we have examined the attitudes of local rural development actors (RDA) in Serbia on rural development policy priorities, in particular their attitudes on beneficiaries of rural development measures, policy objectives, and the most efficient strategies of rural development. We also analysed whether the respondents' attitudes differ depending on the socio-economic characteristic of surveyed regions (South and North of Serbia). Data on attitudes of RDAs were collected through direct survey with representatives of 30 rural communities, and analysed using descriptive statistics methods and Ajzen's theory of planned behaviour. Results indicate that respondents' attitudes on rural policy are conservative and oriented towards objectives related to agriculture and interests of farmers and that socio-economic characteristic of the regions contribute to distinction in attitudes of RDAs.

Key words: *policy formulation, beneficiaries of rural development, policy efficiency, attitudes of rural development actors, rural Serbia.*

JEL: *Q18*

Introduction

A modern, multi-sectorial and place-based approach to rural development requires important changes in policy formulation and programing. It is particularly important for transitional countries, with traditional hierarchical administrative structures.

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Strengthening of decentralized systems for planning, financing and implementation of rural development at the local level in those countries requires significant investments in setting the institutional system, including strengthening the capacity of local authorities. Limited human resources, lack of regulatory framework and funding and insufficient experience in policy formulation and operating large projects, are the major obstacles to more efficient rural development policies. Innovative institutions and organizations that regulate issues of rural development are product of the social capital, that is, the level of development of horizontal and vertical connections (bonding, bridging and linking) (Herbel et al., 2012). New types of connections between local and other external parties represent an effective way to influence the macro level and it is the basis for advancement of the rural areas. Hence, rural development is considered as a complex mesh of networks in which resources are mobilized and in which the control of the process consists of interplay between local and external forces (Lowe et al., 1995).

The agricultural policy in Serbia during transitional period has been the subject of heterogeneous and complex pressures: political and economic instability, extremely adverse weather conditions with their devastating impact on farm income, and from the second half of the 2000s also with global market disturbances. In such setting, the priorities and mechanisms of agricultural policy were selected in a predominantly pragmatic manner (toward productivism), rather than focusing on the needs of the rural population and developing inequalities among rural areas (Bogdanov, 2014). Despite such situation, government is committed to aligning agricultural policy with the EU CAP in order to modernize agricultural sector and improve rural economic activities.

Strengthening the capacity of local governments to carry out its role in rural development is one of the important tasks. These processes were supported by numerous donors and EU funds, which have contributed to the development of local partnerships and strengthen the capacity of local governments to facilitate rural development issues.

Rural areas in Serbia are highly diverse in terms of natural endowments, economic, social and population characteristics. Diversity of rural areas is driven by natural resource endowments, cultural and historical heritage, as well as economic, social and demographic patterns. Huge development gap is evident between the North and South of Serbia. In general, the Autonomous Province of Vojvodina and the capital city of Belgrade show advanced positions compering to the rest of country, particularly the traditionally underdeveloped southern regions. As a result of this situation, there are differences in the capacity of local governments to develop and implement local rural policy. Consequently, we expect to be different, and their views on the priorities of rural development policy, whether as a result of their own experience or general understanding of the rural development policy concept.

The aim of this research is to examine the attitudes of rural development actors – RDAs (representatives of local governments and non-governmental organizations) on rural development policy priorities in terms of: 1) beneficiaries of rural development measures, 2) policy objectives and 3) the most efficient strategies of rural development.

Also, the aim of the research is to determine whether there are significant differences between respondents form different regions.

Literature review

Theories that are based on the principle that the attitudes are only one of the determinants of behaviour and that link them to different predictor variables (subjective norm, perceived control, experience, habits, self-identity, moral obligations, etc.) have a common name, which is expectancy - values models of attitudes. On the basis of this model, different theories which predict behaviour have been developed. The two most important theories are the theory of reasoned action (TRA) and the theory of planned behaviour (TPB). The requirement of the TRA is that behaviour must be under volitional control. Since there are a number of behaviours that are not under the absolute voluntary control, Ajzen introduced a new variable – the perceived behavioural control (PBC) and formulated the theory of planned behaviour (Ajzen, 1991).

According to TPB, particular behaviour is largely influenced by the intention, which is determined by three elements: the person's attitude toward specific behaviours, subjective norms, and perceived level of control over the behaviour. For the prediction of behaviour, specific attitudes are more important than general attitudes. The attitude towards the behaviour represents people's beliefs about the desirability or undesirability of certain behaviour, about the consequences that it causes, and about other feelings related to the behaviour in question. The subjective norm is actually the social pressure of performing some action. Perceived control over the behaviour represents beliefs about self-efficiency and one's own abilities to have control over the behaviour in question. If individuals believe that there are more resources and opportunities than obstacles, it is assumed that the control of behaviour is bigger (Ajzen, 1991).

There are several studies that have been carried out with the aim to identify attitudes about agricultural and rural policy and/or its segments. Hartell et al. (2002) examined the opinions of the European agricultural economists about rural development policies in order to direct policy makers on which developmental aspects they should focus on. In general, they saw farmers as priority beneficiaries, but there was more disagreement on priority problems and goals because of the differences in the level of development of the countries from which participants came. As effective strategies, agricultural economists mostly chose those which are related to investment in human capital, in rural municipal infrastructure, and strategies that are oriented on environment protection and strengthening the local leadership structures.

Defrancesco et al. (2008) used two models to investigate farmers' predisposition in participation in one of three specific agri-environmental measures (AEMs). The second model investigate farmers' attitudes and beliefs about AEMs. Results highlight that farmers' attitudes and beliefs have significant effects on adoption of agri-environmental programmes, so they have to be taken into account in a process of designing agri-environmental measures. The survey sample included 139 family farm holders, and theoretical approach was theory of planned behavior.

Gorton et al. (2008) made a comparative analysis of farmers' attitudes to agricultural production, diversification and policy support, and behavioural intentions in five Member States of the EU (France, Lithuania, Slovakia, Sweden, England). The results indicate that farmers' focus is still on agriculture and ideas on policy liberalization are not close to them. The majority of farmers believe that survival of their farms is depended on policy support, but their attitudes are not consistent regarding the instruments through which policy support may be delivered. Farmers from the new countries are significantly opposed to ideas linked with the policy liberalization, and support those which are concentrated on agriculture. Ajzen's theory of planned behaviour was used as a theoretical framework, and data were collected through direct survey.

Since the agriculture is very important in the Republic of Macedonia, Kotevska et al. (2012) used the theory of planned behaviour for understanding Macedonian farmers' attitude and behavioural intentions in the context of the EU accession and the potential policy and market changes. Furthermore, another issue was to observe whether there are significant discrepancies among farmers and their attitudes towards EU accession.

In Serbia, there has not been enough research devoted to the attitudes of local stakeholders about rural development policies. In the report "Small rural households", Bogdanov (2007) presented the subjective assessment of households and local decision makers about the situation in the rural areas of Serbia. Due to the natural and economic diversity of rural areas in Serbia the study put an emphasis on the differences that exist between different regions. The results showed that traditional perceptions of the role of different actors in rural development prevail. The highest expectations that the respondents have are from the hierarchical structures with the most power and authority and very small number of respondents identified themselves as key actors responsible for the improvement of rural areas. The study also highlighted that households and local decision-makers do not share the same views about the situation and problems in their rural areas (e.g. there is a high consensus on the dissatisfaction with the quality of life in rural areas, but both groups have selected different priorities).

Research Methodology

In order to make the case study one of the standard techniques of descriptive methods was used – survey in the period of April-June 2012.The survey was conducted in the Republic of Serbia, and the results were interpreted at the level of two areas: Serbia North (hereinafter SN) that includes Belgrade and Vojvodina; and Serbia South (hereinafter SS) – Šumadija and Western Serbia, South Eastern Serbia and Kosovo and Metohija.

Selected regions correspond to the current NUTS II division of the territory of Serbia. Besides, this division reflects the significant differences of these two entities in terms of socio-economic characteristics and natural features. Natural features have an impact on the structure and the regional typologies of farming systems, while the institutional and infrastructural development results from cultural and historical background.

The questionnaire was structured in into three sections. The first group of questions investigated which category of the rural population should be the priority group of

beneficiaries of rural development policy. The second set of questions aimed to identify the priority objectives of rural development policy. Finally, the third set of questions explored which strategies are the most effective for rural development.

Table 1. The structure of questionnaire

Variable	Offered answers
Priority beneficiaries of rural development	Farmers
	Households with diversified on farm activities
	Rural poor
	Pluriactive farmers
	Immobile rural citizens
	Nature lovers, future generations
	All rural citizens equally
Priority objectives of rural development policy	Increasing employment of rural population
	High quality of life of rural population
	Protection of environment and biodiversity
	Higher rural population growth rates
	Preserved traditional rural occupations
	Preservation of rural landscapes
	Social equality in rural areas
	Equitable political influence of rural population
Suggestion of the most effective strategy for rural development	Support for on farm diversification
	Improvement of rural municipal infrastructure
	Protection of natural resources
	Invest in rural human capital
	Strengthening social services
	Strengthening local leadership structures
	Support for young returnees
	Income support and compensatory payments
	Fiscal decentralization
	Activation of land market

Source: Papić, 2013

Questions were closed-ended, with four alternative answers offered. To summarize data from the questionnaire in the appropriate form, we used descriptive statistics method: percentage response distributions, measures of central tendency – average value (hereinafter AV), and dispersion measures – standard deviation (hereinafter SD), which describe how close the values or responses are to central tendencies. The results about variables of interest are presented in the tables. Comparative method was used for assessing the relevant attitudes of local actors (government officials and representatives of civil society) from the North and the South of Serbia. Characteristics of respondents are shown in Table 2.

Table 2. Gender, age, education and occupation of respondents (%)

Characteristics of respondents		Serbia North	Serbia South
Gender	M	53.8	34.8
	F	46.2	65.2
	Total	100	100
Age	25- 45	76.9	30.4
	45-65	23.1	69.6
	Total	100	100
Education	College	0.0	4.3
	University	92.3	82.6
	Master's degree	7.7	8.7
	PhD	0.0	4.3
	Total	100	100
Occupation	Experts in rural development	7.7	13.0
	Experts in agriculture	46.2	21.7
	Experts in economy	15.4	26.1
	Experts in ecology	0.0	8.7
	Experts in spatial planning	15.4	8.7
	Other experts	15.4	21.7
	Total	100	100

Source: Author's calculation based on the survey data

Research results

Overall analysis of rural development policy priorities

Survey results indicate that farmers are identified as top ***priority beneficiaries*** of rural development policy (66.7%), while the *households with diversified on farm activities* hold the second place (61.1%). High priority is also assigned to *poor rural residents and pluriactive farmers* (over 58%). These responses indicate that respondents give priority to agriculture, e.g. sectorial aspects of rural development policy. Such understanding of rural policy is specific of decision-makers who do not have enough experience in the operationalization of rural development support, and whose awareness of other policy instruments is very modest. An extremely low priority was not given to any group of beneficiaries. However, among other types of beneficiaries, respondents give lower priority to those rural residents whose activities are not related to the village and agriculture, such as nature lovers, environmentalists, etc. It is assumed that the reason is that the respondents see this group of potential users as rivals to farmers, as those who use the privileges of rural ambience.

Table 3. Priority beneficiaries of rural development policy (%)

Beneficiaries	High Priority	Low Priority
Farmers	66.7	2.8
Households with diversified on farm activities	61.1	2.8
Rural poor	58.3	13.9
Pluriactive farmers	58.3	5.6
Immobile rural citizens	50.0	16.7
Nature lovers, succeeding generations	27.8	19.4
All rural citizens equally	22.2	13.9

Source: Author's calculation based on the survey data

Influence of urban people in the sphere of rural public policies (particularly those related to environmental protection and the protection of plant and animal species) is increasing rapidly. Therefore, it is very possible that if this trend continues, the types of rural development incentives will greatly depend on the correlation between the needs of rural residents and the wishes and nostalgic vision that urban population has of rural areas (Freshwater, 2000).

In terms of ***policy objectives,*** the highest priority was given to the *increasing employment of rural population* and *quality of life of rural population*, followed by environmental protection and biodiversity preservation. Both the first ranked objectives are closely tied to the activation of rural labour market and increasing income generating opportunities.

Table 4. Priority objectives of rural development policy (%)

Objectives	High	Low
Increasing employment of rural population	80.6	2.8
Quality of life	77.8	2.8
Environmental protection	75.0	0.0
Population growth	61.1	11.1
Traditional occupations	55.6	5.6
Rural landscapes	41.7	11.1
Social disparities	38.9	0.0
Stronger political voice	30.6	16.7

Source: Author's calculation based on the survey data

This result corresponds with what has been found in previous research in Serbia, where farmers emphasized the lack of communal infrastructure and agro-environmental problems as factors that are affecting their quality of life to the same extent as low level income (Bogdanov, 2007). The high ranking of priorities related to income generation is a common characteristic of rural policies in transitional countries. Davis (2006) already found that rural non-farm sector is crucial factor in providing rural employment and income. Growth of rural non-farm economy implies development of all economic activities other than production of primary agricultural commodities. It also implies renewal of institutional framework (roads, schools, hospitals etc.) in rural

areas. Therefore it represents desirable policy objective in these countries since it offers various options for improvement of quality of households' income and living standards.

Attitudes on the ***effectiveness of particular strategies*** are resulting from the experience of local policy makers with different forms of support that have been implemented in previous years. Considering that most of respondents were involved in the design and implementation of these measures, their attitudes are to some extent subjective. The *support for on farm income diversification* weighed as the most effective strategy by the majority respondents. This result is highly compatible with the answers to questions about the primary beneficiaries of rural development support and policy objectives. The strategies that do not target income generation and infrastructural issues (such as fiscal decentralization, strengthening the social services, support to returnees and the like), have lower remarks i.e. largest number of respondents are inferior to them or have negative attitudes. Although RDAs do not pay much attention to strategies that support returnees, in the literature there are studies that emphasize the importance of policies that attract young people to the countryside. Muilu, Rusanen (2003) point out that young people are the base of the economic viability of rural areas. Stockdale (2006) and Stockdale et al. (2000) consider that return migration can positively influence to the development of rural areas through inflow of human capital, through new skills and entrepreneurship.

Table 5. Most efficient Rural Development Strategies (%)

Strategies	Effective	Counterproductive
Support for on farm diversification	81.8	0.0
Improvement of rural municipal infrastructure	75.8	0.0
Protection of natural resources	69.7	0.0
Invest in rural human capital	66.7	3.0
Strengthening social services	60.6	3.0
Strengthening local leadership structures	42.4	9.0
Support for young returnees	36.4	15.0
Income support and compensatory payments	33.3	12.0
Fiscal decentralization	30.3	15.0
Activation of land market	30.3	12.0

Source: Author's calculation based on the survey data

Regional analysis

If we look at the research results at the entity level (SN and SS), we can see that there are differences in answers that are not equal in all surveyed aspects.

Regarding ***priority beneficiaries*** of rural development policy, respondents from SN have opted for farmers (52%). There is a high consensus of the respondents, as the average rate of this priority is very high (3.92 on a scale from 1 to 4), while the standard deviation is lowest compering with other answers (SD 0.27). As the SN region is

characterized by highly capital intensive and commercialy oriented farming, with local economy well integrated to agriculture, such attitude towards priority beneficiarief of RD policy is not unexpected. Others high-ranking beneficiaries are households with diversified on-farm activities (26.1 % AV 3.38 SD 0.49) and pluriactive farmers (21.7% AV 3.38 SD 0.49). The higher SDs indicates that there is some polarization in respondent's opinions, which means that important segment of RDAs have doubts about these two groups of beneficiaries.

Respondents from SS see *households with diversified on farm activities* as priority beneficiaries of rural development policy (69.6%, AV 3.70 SD 0.64), followed by pluriactive farmers (69.6%, AV 3.61 SD 0.46). These answers were expected, considering that SS region dominated by small scale agriculture, semi subsistence farming, where other gainful activities on farm and pluriactivity of farm holders is most desirable option. Several studies indicate that rural households diversify their farm business for economic reasons in order to maintain or increase business income (Bowler et al., 1996; Nickerson, 2001). Also Barbieri et al. (2009) have demonstrated that for rural households on-farm diversification is a appropriate way to generate additional income, to enhancement quality of life of theirs family and a to maximize economic use of their existing resources. Blad (2010) and Dries et al. (2011) highlight the importance of pluriactivity for farmers with insufficient income from agriculture and for farmers who have the desire to achieve a higher living standard.

Table 6. Priority beneficiaries, objectives and most efficient strategies of rural development policy - regional comparison

Section	Serbia North (SN)				Serbia South (SS)			
	Priority Rank	**%**	**AV**	**SD**	**Priority Rank**	**%**	**AV**	**SD**
Beneficiaries	Farmers	52.2	3.92	0.27	Households with diversified on-farm activities	69.6	3.70	0.46
	Pluriactive farmers	21.7	3.38	0.49	Pluriactive farmers	69.6	3.61	0.64
	Households with diversified on-farm activities	26.1	3.38	0.62	Farmers	52.2	3.48	0.58

Section	Serbia North (SN)				Serbia South (SS)			
	Priority Rank	**%**	**AV**	**SD**	**Priority Rank**	**%**	**AV**	**SD**
Objectives	Quality of life	80.0	3.82	0.39	Increasing employment of rural population	90.0	3.87	0.34
	Environmental protection	70.0	3.77	0.58	Environmental protection	80.0	3.78	0.41
	Increasing employment of rural population	70.0	3.62	0.62	Quality of life	70.0	3.74	0.44
Strategies	Support for on farm diversification	80.0	3.69	0.46	Improvement of rural municipal infrastructure	86.4	3.86	0.64
	Strengthening social services	70.0	3.64	0.48	Support for on farm diversification	81.8	3.73	0.69
	Protection of natural resources	50.0	3.55	0.50	Protection of natural resources	77.3	3.59	0.89

Source: Author's calculation based on the survey data

Answers indicate that ***the priority objectives*** of rural development policy between the two regions are very similar. Respondents from SN region have lower consensus on priority objectives, as evidenced by all three indicators (% of respondents, the average value and standard deviation). On the other hand, respondents from SS are highly consistent that increasing employment of rural population has a highest priority among other policy objectives (90% AV 3.87 SD 0.34). RDAs from both regions selected environmental protection as the second most important policy objective. It is evident that the respondents from SS region have a slightly greater awareness of importance of natural resources then RDAs form SN (80% : 70%), probably because their rural economy is more oriented toward rural tourism, well preserved landscape, natural and cultural heritage etc.

The most efficient strategy for the less developed SS is the improvement of rural municipal infrastructure (86.4 % AV 3.86 SD 0.64). It is followed by support for *on farm diversification* (81.8% AV 3.73 SD 0.69) which is ranked first in the North (80% AV 3.69 SD 0.46). The ranking differences suggest that the first issues to be solved in the South are infrastructural problems and poor living conditions. Also research shows that respondents from both areas expect that beside agricultural production,

rural development policy should enable the development of non-agricultural activities in order to achieve comprehensive development. Therefore, they see support on farm diversification as a strategy that lead to higher productivity, economic and social development of the entire rural area. Protection of natural resources is ranked third in both territories (SN – 50% AV 3.55 and SS – 77.3 % AV 3.59). A standard deviation value (0.89) on the SS shows that individual responses of RDAs significantly vary from the average value, which indicates that the great potential in this region for dealing with multifunction agriculture is not sufficiently recognized.

Conclusion

The theory of planned behaviour proved to be useful theoretical framework for the assessment of local stakeholders' attitudes about rural policies, because it can indicate prevailing option for creation of local development strategies. According to this theory we may assume that the local rural development actors select policy options according to their social norms, attitudes (acquired on the basis of experience and knowledge) and local capacities for implementation.

Research on the attitudes of rural development actors in Serbia on rural policies showed that they paid great attention to agriculture and income of family farms. Social public goods such as environmental issues, the needs of other rural residents and services which are of interest to the wider public and society, are not high ranked among their priorities. This result suggests that local policy makers are closer to the traditional understanding of rural development policy, which is seen as a support eligible only for farmers *per se*. This general observation points to the necessity of a much larger effort to improve the knowledge and raising awareness of local stakeholders on the objectives and principles that govern modern rural development policy.

At the regional level, RDAs showed different attitudes in terms of all three surveyed aspects: priority beneficiaries, priority objectives and the most efficient strategy.

Respondents from SN clearly identify farmers as priority beneficiaries, while there is inconsistency in their answers about other priority categories. Such finding comes from regional diversity of rural areas and characteristics of agriculture. Region SN is e economically well-developed, with large farms and intensive farming practices, and RDAs primary give focus to farmers and farm investment support. Region SS is economically less developed than SN, characterised by small and semi-subsistence farms, traditional and extensive agriculture, and it is not surprising that RDAs from this region mostly agree that households with on farm diversification and the pluriactive farmers have the highest priority among other policy beneficiaries.

Better quality of life, increasing employment of rural population and environmental protection are perceived as high priority objectives of the rural policy in both regions, but there are differences in their consistency. Namely, respondents from SS were unanimous about priority objectives. This especially refers to priority objective "increasing employment of rural population". The RDAs from this region also agreed

in higher percent (80%) than the RDAs from SN (70%), that environmental protection is very important objective of rural development policy. That is probably because of preserved ecosystems and biodiversity in this region. This further indicate that concept of multifunctional development is to a certain extent seen as an adequate solution for economic growth of this area.

Survey results on the issue of the most efficient strategies indicate that while RDAs from SS identify improvement of rural municipal infrastructure as the most efficient strategy (86.4% AV 3.86 SD 0.64), respondents from the SN concentrate more on other strategies (primarily on support for on farm diversification – 80.0 % AV 3.69 SD 0.46) because they have developed infrastructure. Such attitudes support the conclusion that for SS region this strategy represents precondition for the achievement of other development priorities. The fact that RDAs from both regions identify support for on farm diversification and protection of natural resources as an important issue indicates that the potential that exists in rural areas can be greatly utilized, both in terms of hiring people, securing food safety and maintaining the ecological balance.

Attitudes of RDAs about rural policy priorites could be seen as an important indicator of their understanding of rural development concept. Therefore our research provides information for policy makers in Serbia which could help them to create policy solutions that are adapted to different capacities of local comunnities and raise awarnes of local actors about modern concept of rural development.

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STAVOVI LOKALNIH AKTERA U SRBIJI O POLITICI RURALNOG RAZVOJA[4]

Ružica Papić[5], Natalija Bogdanov[6]

Rezime

Ključni izazov za zemlje u tranziciji predstavlja decentralizovana lokalna samouprava sa jakim kaacitetima koji omogućavaju rad sa novim modelima podrške ruralnom razvoju. U radu su istraživani stavovi lokalnih aktera u Srbiji o prioritetima politike ruralnog razvoja, tačnije o prioritetnim korisnicima podrške za ruralni razvoji, prioritetnim ciljevima, kao i najefikasnijim strategijama ruralnog razvoja. Takođe je istraživano da li razlike u odgovorima potiču od socio-ekonomskih karakteristika ispitivanih regiona (Sjever i Jug Srbije). Podaci su prikupljeni putem ankete sa 30 predstavnika lokalnih zajednica, analizirani i interpretirani uz pomoć metoda deskriptivne statistike i Ajzenove teorije planiranog ponašanja. Rezultati ukazuju da su stavovi ispitanika o ruralnim politikama konzervativni i orjentisani ka poljoprivredi i intersima farmera, kao i da razlike u stavovima ispitanika potiču od socio-ekonomskih karakteristika regiona kojima pripradaju.

***Ključne riječi**: kreiranje politika, korisnici politika ruralnog razvoja, efikasnost politika, stavovi lokalnih aktera, ruralna područja Srbije.*

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POLUTION OF BASIC NATURAL RESOURCES WITH HAZARDOUS MATTERS

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Summary

The paper analyzes conceptual guidelines and a multidimensional approach to the thematic of agriculture as a land property with rich and available natural resources, which are characterized by their specifics. Specifics of natural resources are characterized by renewable and non-renewable contents without which life is impossible, and these basic contents are land, air and water. In addition, agrarians and agriculture have natural riches in their possession, out of which food for living creatures on the planet is produced.

Natural resources are the contents of agrarians and with every pollution, and thus destruction of natural resources, it damages and destroys sustainability of both natural resources and the sustainability of agriculture with its content of living creatures and plants on which life and survival on this planet depend on.

Any pollution, especially from hazardous substances and excessive treatment from the air and ground, causes damage, destruction and loss of life which is contained by living creatures and plant life, a prerequisite for sustainable development and the survival on Earth.

The problem and aim of this paper is to point out and prove a phenomenon of the modern world, which poses a threat to the survival of natural resources, and thus life to living things and plant life on Earth. However, the aforementioned phenomenon is not a much known one, it's only known to a shortlist of scientists and theoreticians, while the general public is not aware of the mentioned and doesn't even assume the consequences of the threat.

Key words: *pollution, resources, agriculture, dangerous, matter.*

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Introductory remarks

First of all we point to the problem of pollution, and with that the destruction of a number of natural resources, which among other things is the basis for survival of agricultural, i.e. sown plants and food products (fruits, vegetables, grains and so on). Life on Earth depends from planted products and other resources. Secondly, work warns on artificial contamination of certain natural resources, among which are: water, soil and air which, if they were polluted, there wouldn't be sustainable development of agriculture, or the environment (Kristoforović-Ilić, Ilić, 2006).

Therefore, any pollution of the aforementioned renewable and non-renewable natural resources, through artificial spraying from aircrafts, represents a major problem for the safety and survival of life on Earth.

So, the basis of our assumptions on the problem is constituted by the application of impermissible, experimental and dangerous substances such as: explosive, radioactive, toxic and polluting substances. These substances drastically pollute agriculture and the environment. Resorting to hazardous materials by contractors is aimed at, research for scientific purposes, as well as threating threats, through which human lives are endangered, as well as the lives of other living creatures and plant life.

Dangerous materials and their contents such as poisons, radiation and explosive materials are; nuclear, biological and chemical weapons, as well as treating the planet with chemical and biological agents. Through the use of above mentioned substances certain metals, viruses and bacteria are discarded. The presence of these dangerous matters, causes great diseases and epidemics in humans, then diseases and pandemics of other living beings.

The stated problem aims to prove and give proof of the threats to agrarians, through the presence of hazardous substances, as well as consequence caused by them.

In researching this problem, the methods of analysis and synthesis will be applied, through which necessary answers and adequate conclusions will be obtained about the set problem.

Theoretical bases for researching dangerous threats and occurrences

The area of research and theoretical proofs of threatening security phenomena in agrarians and ecology, virtually did not even attempt to officially investigate this sphere, or was marginally mentioned in the international community, including the Republic of Serbia. Very little attention was paid to this phenomenon by the individuals of the Military Medical Academy in Serbia, in addition to the problem of the modern world. On the other hand threatening security occurrences, were most often mentioned on the basis of experiences of individuals or small groups of people as researchers. Therefore, our interest and commitment to this issue arose on how to bridge this gap and link between interpretation i.e. observation and research in this sphere and ecological occurrences in practice today. Thus, the contribution to the theory and science through this paper is to point out and prove the consequence it had with agrarians, ecology and

the lives of living beings, from the aforementioned threats.

The theoretical consideration of the aforementioned threats in ecological-security occurrence as a political, legal, economic and sociological definition of these phenomena. Through the occurrence mentioned above, agrarians are polluted, and thus represents a threat to overall security in a certain area.

First of all, in theory, threatening security occurrences in their existing state are a part of social reality i.e. an integral element of the social whole of the new era. In order to perform the necessary research of this phenomenon, it is necessary to apply the necessary and inevitable research methods.

The process of investigating and explaining actual events will be applied by using the **synthesis** method, and through the merger of given activities in complex problems which are a threat to the economy and ecology. While using the **analysis** method, a process of research and explanations of reality and its parsing will be applied, starting from complex into simpler parts of reasoning a given problem.

Threatening ecological occurrences

The modern world that surrounds us is made of numerous natural and social phenomena that are intertwined, overlap and complement one another, and thus influence each other. Observing artificial natural phenomena which occur independently, and not often independently from the awareness from people who plan, organize and impose certain threats. These threats were directed at the international community, as well as the specific region in which the Republic of Serbia is found. In relation to our understanding of human activities, the eventuality of an influence on climate change in natural and artificial sense is a possibility. In this case man influences and changes the nature, and therefore society, with his activities and operations, such as the disposal of uranium, plutonium and chemical-biological agents. Thus, the social phenomena in this regard, occur as a result of related actions of certain societies and their institutions (Mihajlović, 2014). Accordingly, the occasional and often everyday occurrences, produce and cause serious threats, and thus the security changes in a negative process. The threats to human society in recent times are made from the changes in the security situation in an unsafe one, in the direction of breaching health safety and life in living beings, as well as the destruction of plant life.

Therefore, in the very act of using nuclear, chemical and biological weapons and other dangerous devices, a series of dangerous and complex activities are imposed, which in their content consist of specific processes that cause threat of pollution, poisoning, injury, loss of life and thus the achievement of the desired goals of providers. In this sense, the essential characteristic of threating security threats is that they are created by certain countries and their institutions, not by individuals or groups of people. Resorting to the use of dangerous weapons for mass assassination, destruction and poisoning, doesn't only represents a threat to health security in people, but also psychological factors that cause fear, panic, health disorders and related troubles of these emerging threats.

Causes of threat occurrences

In this sense, the causes of threatening ecological-security phenomena vary, among which are: political, economic, doctrine, strategical and tactical. The causes of the manifestation of the above mentioned issues can exist in a particular society or by influence of a different country or groups of countries on a particular society or country. Looking at the NATO aggression against the FRY and the RS, threats which were manifested by a group of countries on a single society i.e. country. While the application of Chemtrails and HAARP system is the influence of a part of the international community on more societies or places on Earth.

Chemtrails and HAARP systems

1. ***Chemtrails*** is a system known for chemical white traces in the air, caused by discharging from jets with white trace i.e. chemical that disperse and spread through the air causing new occurrences in the form of a white cloud. By creating a network of poisons of chemicals around the Planet, justifying and explaining all of that, by saying that it prevents the sun from getting too hot. Therefore, the Germans have admitted that the planet is overflown by unmarked planes that carry and disperse sulfur which is allegedly being burned in the plane and under high pressure being created in sulfur dioxide. Next to sulfur dioxide, it releases aluminum, various viruses and other hard metals are released in the atmosphere, whose assignment is to fry the natural resources, destroy the earth and make it suitable for a genetically modified organism (GMO).

2. ***HAARP*** as a system connects to the Chemtrails system, whereby they influence climate changes and natural disasters. In this regard, some scientists wonder and indicate that the third world war, in a sense began over ecology (http://www.novosti.rs/vesti/naslovna/reportaze/aktuelno.293.html:456965-Kemtrejlsi-i-HAARP-tajno-oruzje-SAD). Many prominent world theoreticians and scientists have warned for years about this phenomenon. Among them is PhD Nikolas Begič, who actively participates in the campaign against experiments which are made in the HAARP program (High-Frequency Active Aural Research Program in Alaska). Experiments are made by very powerful technology for the production of high frequency electromagnetic waves by bombarding particles in ionosphere and thereby getting heat up. Electromagnetic waves then bounce back at extremely low frequencies penetrating everything on earth, i.e. alive and dead. In humans, this method can cause brain damage. The modification of climate aims to cause hostile states long droughts and floods, which was written in a book by Zbigniew Brzezinski (Živković, 2005).

The concept and definition of polluting the environment with dangerous matters

Before we approach to considering and defining the problem of polluting the environment by using dangerous matters, it is necessary to explain what is known about this, what is written, what is new and what is suggested? Therefore, having this in mind, we are

mentioning the following data and proofs:

- When it is talked about NATO aggression on Yugoslavia and Republic of Srpska, the entire international community knows very well that the act of aggression and the goal of that act, is with made up reasons and executed scenario. However a small number of states or nations know about the aftermath of this act of violence, while most don't even know the real consequences. After executing the aggression from air and using devastating bombs with the amount of about 34,000 kg of dangerous matters, larger amounts of depleted uranium and plutonium was released (Rajković et. al., 2001). Having this in mind, due to the presence of depleted uranium and plutonium, a large number of citizens has gotten ill from carcinoma in Serbia, as well as Republic of Srpska, but also other surrounding countries. However, Italian soldiers have also had health consequences from radiation on Kosovo and Metohija (Chomsky, 2001). Therefore, this problem is not a commonly known or written about. The proposition for the solution of this non-humane phenomenon is the only possible on, for the international community to accept and confess its mistake and approach to cleaning the polluted environment from depleted uranium and plutonium which are present in larger amounts on Kosovo and Metohija, South Serbia, (RS) Hadžić, Han Pijesak and other areas.

- As for environment pollution with chemicals through „Chemtrails system", this problem is only known to the experts who are dealing with this type of research, while the rest of the population doesn't know or understand what it is about. The released chemicals contain several types of metals and chemicals, which have an effect on living organisms, due to what people and other living beings get ill. Recommendations for the solution of this problem are only possible by rejecting this way of influencing climate change and leave the same to nature and not irritate nature for it to react to every human activity, even a one of this kind.

Therefore, the conceptual definition of hazardous and explosive weapons with the contents of depleted uranium, chemical, biological and radiological means, represents a devastating weapon for mass killing and destruction of natural and social values and space. According to this, devastating chemical, biological, radiological and nuclear weapons are the means of destroying military forces, killing of citizens and destruction of property on foreign territories. Republic of Serbia and its area are totally polluted with dangerous matters which represent a huge consequence to the safety of life and the environment. There by, pollution of the environment implies an illegal and unacceptable postponement of devastating, explosive and radioactive weapons, which caused pollution of the environment, due to what great consequences for the safety of people, property and other social values have occurred.

Analysis of the bombed spaces and their pollution in Yugoslavia, Bosnia and Herzegovina and Republic of Srpska

„However it should start from the first truth represented by Košik (2010) in the time of bombing: weapons and capabilities of command headquarters were being tested on live

goals in the war against Serbs, but also the psyche of people was examined. This is why it can be freely said that his analysis on the effects of the bombing which has an effect even today, acts on the health and psych of the inhabitants of Montenegro (Drecun, 2013). That tragic year of 1999 has had 78 days of bombarding which caused 2000 civilian and 1002 soldier deaths. 36,219 flights of military airplanes were executed. NATO planes were flying at the height of about 10-15 km where the ozone layer is. The depleted uranium was used at 113 locations on the area of today's Yugoslavia" (http// www.novinar.de/2007/11/09/posledice-bonbardovanja-srbije-1999-godine.htm/).

NATO armed forces have executed a bombing on Yugoslavia, Republic of Srpska-BiH, and with this Republic of Serbia from air (http://mondo.rs/a104083/Info/Ex-Yu/BiH-Posledice-uranijuma-zabranjena-tema.html). In the aggression on the Republic of Serbia, military, police objects, industrial objects of NIS, in Novi Sad, Pančevo, Belgrade and other areas were bombed. Other than those, Hospital Dragiša Mišović in Belgrade, Novi Pazar, passenger train in Varvarin, Tower on Avala and multiple repeaters and civilian objects in Aleksinac, Belgrade, Pančevo, Niš, Novi Sad, Leskovac, Sombor, Subotica, Herceg Novi, Bačka Palanka, Kruševac, Trstenik, Vladičin Han and other places. A military intervention was executed on armed forces and some objects in the Republic of Srpska-BiH in Hadžići and Han Pijesak. Airports in Belgrade, Priština, Užice, Kraljevo and multiple objects around airports, refineries, police station barracks and like were destroyed (Smiljanić, 2009). Expulsion of devastating and explosive projectiles from airplanes, which contain chemical, biological and nuclear matters, objects of special social interest were destroyed, as well as civilian objects, which caused irreparable material damage, loss of human life, a large number of people got ill from carcinoma and the environment was polluted.

General information on the consequences after the bombing of Yugoslavia and (Republic of Srpska)

Ecological and health consequences from NATO bombing in 1999 has drastically increased, with an accent on depleted uranium. Hence, "the number of diseased by cancer in 1999 was 9,899, while in 2000 this number jumped to 22,123, and in 2010 to 26,152, to go to 33,000 in 2011, while the number of dead from cancer was between 55 and 60% each year".

With this in mind, the Swedish health organization (WHO) and international community for atomic energy (IAEA), as well as the Swedish Radiation Protection Institute and UNEP and based on gathered data, measurement of radioactivity and their threat on humans was executed. Based on these reports, dangerous bombed zones in those areas in which depleted uranium was used were determined. Therefore, a working group for Balkan was established and it confirmed the existence of four environmental hot spots in four areas, which are: in Pančevo, Kragujevac, Novi Sad and Bor, where major threats and irreparable consequences were established on health and life safety of people and other living things. Based on this, they predicted security protection by cleaning these environments, in order to avoid major consequences on health safety in

people. With this research the teams have established a large amount of radiation in the mentioned zones, as well as in rivers Dunav and Timok (UNEP, UNCHS, 1999). The presence of large amounts of radioactive matters and resources. The presence of large amounts of radioactive materials and resources has created the conditions for illnesses in humans and animals, which is why there has been and there will be diseases caused by carcinoma in large number of people, and with this loss of life.

The consequences are removed slowly and in an inadequate way

At the end of 2003 (11.12.) 139 undamaged capacitors filled with cancerous transformer oil-pyralene have went through France, to the French plant „Šeše", the biggest in Europe for destruction of dangerous matters, where they will be melted. The total amount of hazardous waste, placed in special containers is about 5.5 tons. In the municipality of Bujanovac, at the location of Bratoselce, during 2003, 350 bullets containing depleted uranium were extracted. During 2004, the cleaning of Pljačkovice next to Vranje was finished, where at an extremely inaccessible terrain 48 bullets with depleted uranium were found, there is no data on the numbers left. Department for Environmental Protection of the Ministry of Science and Environmental Protection has signed a contract on realization of the project of remediation of depleted uranium contaminated area on the location of Borovac, on the territory of municipality of Bujanovac on the 19.07.2005 with the institute of nuclear science. Announcements from the line ministry say that the recovery of the Reljan location in the municipality of Preševo should be done in the following year, with which the recovery of all locations contaminated with depleted uranium on the territory of Serbia outside Kosovo would be finished (Simeunović, 2000). "However, a question is raised, why the international community, western European and economically developed countries don't make the effort to reduce the consequences to a minimum, since they allowed for this inhumane criminal act of violence." These consequences will cause harm, not only to the citizens of BiH and Republic of Serbia, but also citizens of neighboring countries, as well as citizens which have and will pay a visit to this region. Waste as an agent doesn't recognize citizens by their nationality or state lines. Why don't they do it for their citizens, if not for the citizens of the Republic of Serbia?

Contamination by ejected uranium and time after

„The international commission intentionally reduces damages which are created by bombing from uranium waste and other dangerous matters. The data the UN Program for protection of the environment, a professional organization in the UN system, at the request of former Federal Government has published the examination on the state of the environment in three key missions, says that something is being done on the international plan (Đinović, 2013). Each mission was composed of experts from multiple countries and analyzed a dozen industrial locations: Pančevo, Novi Sad, Kragujevac, Bor, Niš and a few thermal power plants. Then Dunav and several localities from the point of endangering the environment such as Kopaonik, Fruška Gora and Zlatibor. At the same time, the same job, in the same amount was being done

by our experts, and it is interesting to say that the published results from the UN and our experts are different in certain findings, but those differences are within the limits of acceptability…" (Košik 2010). With this in mind, the authors raise the question, what happens seven years after the NATO aggression on these two states, and beyond? What after? The data will be shown seven years and much after that by results of the illnesses of the citizens on entire Balkan area, and especially in towns surrounding Pančevo, Novi Sad, Kragujevac, Niš, Bor, Fruška Gora, Zlatibor, Kopaonik, Košar, river Dunav and the area of Kosovo and Metohija (Akame, 2010). Outside these areas, the results from the citizens of Albania, Bulgaria, Italia and other countries will show! Therefore it would be useful for the government to seriously accept the real state and seriously address this dramatically large problem because of the safety of citizens in Republic of Serbia, and wider.

Disposal of chemical and biological agents through Chemtrails system

A larger number of countries in the International community, professional crews and teams are carrying out measurements and take samples from chemical agents' residue which were ejected from planes which were doing airspace "testing", on a large part of planet earth. According to the analysis of certain private laboratories on these matters, there were certain biological and pathogenic agents from microorganisms and certain metals, such as: salt, barium and micron dimension aluminum particles and like. In addition certain specific agents were found, such as:

- Pseudomonas Aeruginosa, which contains a bacteria that attacks the respiratory system in living beings,
- Pseudomonas fluorescens, which contains a bacteria which causes infection of blood and respiratory system,
- Serratia marcescens, which causes inflammation of the brain, heart muscle and other things,
- All kinds of radioactive and nerve poisons which appear as cobwebs and flowers of poplars which cause skin disease in the form of pimples, eczema, ulcers, all the way to burns.

In addition to these, about eight heavy metals that cause various diseases, especially skin cancer is contained (Jovanović Batut, 2011). Because of the scale of this work there is no place to display all content and sites. "For more than about 8 years, the so-called. "Secret government" performs intense "dusting" of this planet population from the air. It's about airplanes for these purposes, specially modified aircrafts that eject i.e. disperse certain biological agents from high-altitude, whose exact chemical composition is currently unknown for the Republic of Serbia, while in other countries, certain analysis as well as the purpose due to which such operation is being done was performed. No matter that many appeals were lodged by the citizens, especially in the USA, the existence of such an operation is officially denied, and all of those who are publicly speaking about this problem are automatically classified in the category of conspiracy theorists. "Uranium, plutonium, contents from cluster bombs, chemtrails

testing, HAARP radiation have greatly polluted the earth, air and water and by this make the agriculture useless and dangerous for health and safety in general.

Characteristics of uranium

"Uranium which remains after the removal of enriched fraction contains 99.8% U; 0.2% up to 0.3% in and around 0.001% "Ui" signifies depleted uranium. Nuclear regulatory commission US defines depleted uranium, as the one in which the percentage of "U" is lower than 0.711% (NRC 2000). Typical composition which is used by the Ministry of Defense of the US is U=0.0006%, U =0.2%, U = 0.0003% and U=99.8%... Uranium from depleted reactive fuel is sometimes processed in plants for uranium enrichment… The United nations program for environmental protection (UNEP, 1999) has found on Kosovo and Metohija 12 Bq/kg U and 12700 kBq/kg for U." (Đurović, et. al., 2011)

"*Natural radiation* is the emission of radioactive substances which are not the product of men. Uranium, radon and other rare elements can be found among these substances. They are very dangerous for the health of man when they are dug up or milled, from where they derive in food, air and water.

Artificial radiation, includes the emission of radioactive substances which can't be found in nature or are the result of nuclear fission processes."

By studying the characteristics of natural and artificial emissions of radioactive matters, it can be concluded that a sudden increase of illness in citizens from carcinoma, the cause can be uranium, plutonium and other forms of radiation which can be found close to people. Illness is caused by the presence of uranium and other dangerous matters in the air, earth and water. Through these three natural energy sources that are the basic natural resources without which life is impossible, and with which living beings are in a direct connection through the usage of air, water and natural products from the land.

The application of HAARP program in polluting the agriculture and (ecology) of the environment

The application of the (HAARP) High Frequency Active Auroral Research Program, i.e. the system which uses the mobile frequency antenna from GWEN towers (Ground Wave Emergency network), is a big problem and represents a danger from illnesses for people with its radiation. In addition to the dangers of getting a disease through the system, with the presence of crystals which are obtained through administration of the system, causes damage to the human mind through contamination of the brain, and implementation of genetic mutations in humans. HAARP project system works through simulation and control of ionosphere processes that can alter and improve performance of communication and related systems. Through HAARP, energy pulses of 3.6 MW can be focused over frequency range of between 2.8 to 10 MHz in ionosphere.

Therefore, the combination of HAARP and Chemtrails system, managing and conducting climate changes on narrower and wider areas i.e. space is being done. Artificial change of climate changes, at the same time artificially works on the psyche

and health of men. In addition to ejection of chemical contents from aircrafts which are dangerous to health on their own, and at the same tome conducting through the HAARP system which is also dangerous to man, there is an additional endangerment of human safety. From the mentioned artificial actions, illnesses in people occur, and with this threats to safety of life.

Pollution of agriculture and the environment with consequences on the Republic of Serbia

Due to the aggression on the area of Republic of Serbia there is still a large and unsolvable problem of adequate equipment for finding and deactivating cluster bombs, mines and other parts of devastating tomahawks due to lack of will from certain governments, lack of money and international foundations, lack of professional-qualified staff for removal of dangerous matters. When it comes to the international factor and its assistance in this matter, one of the few countries is Norway, whose government has provided 3.5 million euros for the search of sector-port Prahovo for detection and removal of residual air bombs i.e. missiles. Norway has provided 3.5 million euros in the next three years for clearance of cluster munition from the territory of Bujanovac, Presevo and Kursumlija. Help was promised from Russia that is, its agency "Emerkom" in demining in two locations, this is partly carried out in Paraćin, and cost was at about two million dollars. When it comes to this location, Russia conducted demining at three micro locations in Paraćin in 2009 and 2010.

In this action 1,253 unexploded different pieces of ordnance were found and destroyed. This location was further endangered by an outbreak of fire in an ammunition warehouse in Paraćin during 2006 and this case has nothing to do with NATO bombs, but this represents a major threat to the safety for humans in the area (Mihailović, 2011). During 2006, at the location "Industrial Zones" in Niš deactivation of cluster bombs has been carried out and then a miner suffered serious injuries by his negligence, with permanent blindness. This activity was conducted by one chosen firm in the Republic of Srpska. According to this a large number of thrown cluster and air bombs left unexploded, and self-flying bombs i.e. "Tomahawk" which have exploded and polluted the area, both in buildings, plains, and rivers. All of the above leads to a large and a hard to solve problem, both in deactivation, and cleaning the consequences of radiation from dangerous chemical, biological, radiological and nuclear materials.

Instead of a conclusion

NATO aggression by air bombing in 1999, is an internationally illegal act of violence against a small and underdeveloped country which was supported by NATO Alliance member states (Belančić, 2004). Aggression with the use of the most advanced military aircrafts and the use of most dangerous weapons of mass murder and destruction, caused the death of about 3000 people at the given time, and how many will lose their health and life from the consequences of nuclear, chemical, biological and radiation weapons, cannot even be assumed, especially if we have in mind that 250,000 citizens of Serbia

are treated from carcinoma. The aggression with the most dangerous weapons of mass destruction, disastrous polluted environment, primarily in the Republic of Serbia, then in Montenegro and Bosnia and Herzegovina, has not much spared any country in the region and beyond. Ejected uranium on the territory of the Republic of Serbia and the Republic of Srpska, will pose a treat for centuries (4500 years according to the statement of the expert team on VMA) to the lives of living beings and their survival in this region. According to existing current statistical data, we can see how people suffer from a serious disease called "cancer", and how many more will become ill in the years to come, we can't assume. Secondly, which increases the threat in this area, is the activity of scientific institutions from economically developed countries is the activity with re-manufactured civil aircraft which are used to treat earth with chemistry. All that is intended to influence climate change. The influence of artificial climate change causes the destruction of agriculture, pollution of agriculture, environment pollution, diseases and ailments in a large number of citizens in the Republic of Serbia. This illegal act caused disasters on large scale, thus destroying enormous material values and causes loss of human life. Whereby, large amounts of chemical agents whose presence endangers health, and thus lives of humans are ejected. Then, pollution of air, water and land, and therefore food products. As far as the HAARP system through which climate change is controlled, and natural disasters caused in conjunction with chemtrails system poses an additional threat to the radiation from repeaters through which direct rays and energy are directed. On the asked question, which is a more cost-effective economic justification for aggression, chemtrails, HAARP or other resources, an answer can be found here, that it is economically justified only to executors and owners of the above mentioned assets. The international community and economically developed countries would need to allocate considerable financial resources, equipment and experts, to cleanse the polluted area. Consequently, they alone bear the greatest responsibility for the catastrophe which is in this place. It would be a major contribution to exert pressure for an end to treating the planet through chemtrails and HAARP system.

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ZAGAĐENJE OSNOVNIH PRIRODNIH RESURSA OPASNIM MATERIJAMA

Ljubo Pejanović[2]

Rezime

U radu su analizirane pojmovne odrednice i višedimenzionalni pristup tematici agrara, kao zemljišnog poseda s raspoloživim i bogatim prirodnim resursima koji se odlikuju svojim specifičnostima. Specifičnosti prirodnih resursa odlikuju se obnovljivim i neobnovljivim sadržajima bez kojih je život nemoguć, a te osnovne sadržaje sačinjavaju zemlja, vazduh i voda. Poljoprivreda raspolaže sa prirodnim bogastvom na kojem se proizvodi hrana za sva živa bića na zemlji planeti.

Svako zagađenje a time i uništavanje prirodnih resursa oštećuje se i uništava održivost, kako prirodnih resursa, tako i održivost poljoprivredne proizvodnje koja obezbeđuje hranu za ljude i životinje, odnosno opstanak na planeti Zemlji.

Svako zagađenje, a naročito opasnim materijama i prekomerno tretiranje iz vazduha i sa zemlje, doprinosi oštećenju, uništenju i nestanku života koji je sadržan od živih bića i biljnog sveta, koji je uslov za održivi razvoj i opstanak života.

Cilj ovog rada je ukazivanje i dokazivanje na fenomen savremenog sveta, koji predstavlja pretnju uništenju prirodnih resursa, a time života na Zemlji, odnosno uništavanje flore i faune. Nažalost, za navedeni fenomen se mnogo ne zna, samo je poznat užem broju naučnika i teoretičara, dok šira javnost o navedenom problemu i pretnji opstanka nije upoznata i ne pretpostavlja koje su posledice navedene pretnje.

Ključne reči*: zagađenje, resursi, poljoprivreda, opasne, materije.*

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DAIRY SECTOR IN REPUBLIC OF MACEDONIA– YESTERDAY, TODAY, TOMORROW

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Abstract

The aim of this study is to follow the changes in dairy sector in Republic of Macedonia. This study is an attempt to address the various important aspects related to dairy sector in Macedonia like source of milk production, average unit productivity, cost of milk production and milk supply channels. It may also provide an understanding of the opportunities and problems associated with the dairy enterprises in Macedonia. The findings of the study may help in ensuring development of country's dairy sector because the research based decisions of policy makers may have real impact on welfare of farmers and progress of all the stakeholders of the sector. The above mentioned objectives of study are achieved through surveying the farmers, statistical data and direct interviews with representatives of government institutions.

Keywords: *milk production, dairy farmers, dairy industry*

JEL: *Q13*

Introduction

Agriculture has historically been an important sector in Macedonian economy. In Macedonia agriculture sector contributes more than 18 percent of the GDP of which the share of agriculture is about 12% and food industry accounts for 6% of GDP. Although, agriculture sector employs more than 20 percent of the total workforce (MKchamber, 2012).

The Macedonian dairy farming, similarly as other sub-sectors, went through dramaticstructural changes during the economic transition period, since the country gained itsindependency in 1991 (Krstevska et. al., 2009). The brake-up of the formerFederation and the ensuing regional conflicts meant a loss of a large and protectedtraditional market,

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so farmers were left vulnerable to thecompetition, and had limited contacts in potentially interesting markets (Simonovska, Nillson, 2011). However, the situation is so far improving, with an abrupt halt in2001 because of the ethnical conflict within the country, but henceforward 2002 thecountry has made considerable progress.The dairy sub-sector, nowadays, is embodied by a large number of small, subsistenceoriented farm households and a decreasing number of large, specialised dairyenterprises that originate from the former socially owned large-scale agriculturalenterprises, so-called agro-combinats (Krstevska et. al., 2009). The milk production ismainly concentrated inthe private sector, hence is very much focused on small scale,family units. A certain proportion of milk is retained on farms for family andlivestock usage, and some quantities are sold directly to consumers, frequentlythrough street markets. Majority of dairy cattle farmers, however, sell their milk to adairy processor(MAFWE, *Annual Agricultural Report 2009-2011*).At the processing level, there are 77 registered dairy companies which are mainlysmall and medium sized. The most important retail market outlets in Macedonia are small shops (66%)followed by supermarkets (18%) and huckster (more precisely, the street traders) (MKchamber, 2012). The small shops and supermarkets are correct in terms ofproduct presentation and cooling. Selling dairy products via street trader is underhygienic aspects, not acceptable under the present conditions. Overcoming transport and transaction costs may contribute to higher income for the farmers and hence to improving their livelihoods. (Voors, D'Haese, 2010).

Materials and methods

The intention of this study was to gain an understanding of dairy farmer's production, problems and future plans. In this order was developed a structured questionnaire and used for collection of data of 30 dairy farms in Macedonia. This section emphasizes the sampling principles and methods involved in selecting dairy farmers who would be asked question by questionnaire. Emphasis in questionnaire was placed on the number of animals in the farm, average milk yield, quality of raw milk, average selling price of milk, subsidies, problems faced by farmers, future plans, etc.

Results

Dairy sector is one of the most promising sectors. Dairy sector generates employment and business opportunities, particularly in the rural and peri-urban areas. A number of people in urban areas are also involved in dairy based business. The public sector departments hold primary responsibility to guide the farmers and play significant role in dairy sector development (MAFWE, *Annual Agricultural Report 2009-2011*). In analysis of milk production in Macedonia, it should be considered that there are two different sectors: individual producers and big agricultural firms. Production of these agricultural companies represents market surplus and 99% of this production is placed on the market, whereas in case of individual farmers, one part of the milk produced remains on the local market (raw milk or cheese), which is a problem in our country (Palaševski, 2007). Dairy enterprise is dominated by the private sector and the role of

government is regulatory. Dairy farms are spread all over the country except in the high mountainous regions where the costs of milk collection would be very high. The major cow milk production areas are found around the perimeter of the northern, western and eastern boundaries of the country near the cities in which neighborhood are located focal dairy plants. These production areas surround the field crop growing regions, which encourage interaction and use of arable by-products. In order of importance, the main raw milk production areas are the Pelagonia region in the south, Polog region in the north-west and the North-eastern region in the country(Krstevska et. al., 2009).

Milk production in the country is characterized by a large number of small farms - traditional farmers (75% of the total) who have low 1-3 cows with low annual milk production of 2-3 thousand liters per cow. Very small number of large specialized farms with over 20 cows (about 3% of the total) with high productivity and annual milk production around 5 thousand liters per cow. Only 1% of farms has more than 50 heads and should be the production of quality genetic material remaining farms (reproductive centers) (MKchamber, 2012). The predominant role of small family farms in the production of milk in Macedonia has already been stressed. Low output (average number of head of cattle's per farm about three cows) raises numerous issues with regard to efficiency of the sector. One of the areas of low technical efficiency is that of milk yields (SSO, *Livestock production 2012*).

The average milk yield per cow in Macedonia is significantly lower if compared to those achieved in the EU. Although average milked yield production per cow was found to rise in Macedonia, it is still low and in 2011 was 2866 liters per cow, and in 2012 was 2 928liters (SSO, *Livestock production 2012*).

Statistical data on the processing sector, i.e. dairy industry in Macedonia are poor as well as livestock fund. The dairy sector experts estimated a total of 77 dairy plants (MKchamber, 2012). The dairy processing firms can roughly be divided into two categories. One can be labeled professional dairies. These are fairly large and expanding firms. These dairies have laboratories to check the fat, protein and dry substance content, and thus pay the farmers according to the quality of the milk. The large-scale dairy processors typically produce consumption milk (pasteurized and UHT) and dairy products, such as yoghurt, sour milk, yellow cheese (kashkaval),white cheese, quark, etc. The other groups are the semi-professional ones, which consist of small plants (so-called mini dairies), processing less than 5000 liters per day. The mini dairies pay a flat rate for the raw milk, without checking for the hygienic and other quality standards. These dairies compensate the low quality of milk by focusing on a few simple products only, generally sour milk and yoghurt (A.Krstevska et. al., 2009).

Table 1. Production of cow's and ewe's milk

year	Number of dairy cows	Average per dairy cow (liter)	Production of cow's milk in '000 liter	Number of milking sheep	Average liter per milking ewe	Production of ewe's milk in '000 liter
2008	129 882	2835	368 217	562 915	68	38 296
2009	114 043	3004	342 622	478 332	69	32 934
2010	124 553	2787	347 103	536 529	60	32 157
2011	131 275	2866	376290	495 693	51	25 381
2012	119 453	2 928	403233	488 114	79	38 616

*Source:*State Statistical Office 2009-2012

Table 2. Production of goat's milk

Year	Number of milking goat	Average per milking goat	Production of milk in '000 litres
2008	100 645	313	31 556
2009	68 270	284	19 386
2010	56 638	266	15 074
2011	62 711	248	15 565
2012	49 828	298	14 848

*Source:*State Statistical Office 2009-2012

According to the data of the State Statistical Office the produced cow milk has decrease 7% in comparison with 2008. A decrease of 14% is noted in the production of sheep's milk, and decrease of 38.6% is noted in the production of goat's milk in comparison with 2008(SSO 2009). In 2010 we can registered increase of 1.2% on total production on cow's milk comparison with previous year.(SSO 2010) In 2011 has significant increase on cow's milk production of 8.4% , increase of 3.3% on goat's milk production and decrease of 21.2% of sheep's milk compared with 2010(SSO 2011).The production of cow's milk in 2012 was 349 769 thousand liters, which is a decrease of 7.0% compared to 2011.An increase of 52.1% in 2012 was registered in sheep's milk production, whereas the production of goat's milk decreased by 4.6% compared to the previous year (SSO, *Livestock production 2012*). During these five years (from 2008 to 2012) we can noted a significant reduction in the production of cow's, goat's and sheep's milk.

A relatively small portion (about 40 %) of the total milk production is delivered to dairy plants for further processing (SSO 2011). The remaining portion of the milk is used on farms to feed livestock and consumed by household members. In addition, farms owning milking cows involve in the processing of milk themselves, producing cheese, and creammeeting own requirements and surpluses are usually sold on green markets.

In Macedonia producer prices of cow milk vary from 17 to 22 MKD. In 2008 average purchased price was 23.9MKD, in 2009 was 16 MKD and 17MKD in 2010, and in 2011 was 18MKD. In 2012 the producer prices has reached the level of 19 MKD

(0.33 euro), sheep milk around 34,96 MKD (0.57euro) and goat milk 19,46 MKD (0.35 euro)(MAFWE, *Annual Agricultural Report 2009-2011*). There are also different types of subventions (premiums, regresses, i.e. direct payments in order to support the development of milk production (ARDP- MAFWE 2007-2013).

If we analyze the exported and imported quantities of milk and dairy products for years, there is a trend of declining exports in 2011 (3 727 tones) compared to 2008 (4 390 tones) and decreased by 16%. While the quantity imported in 2011 (31 472 tones) has increased compared to 2008 (19 415 tones) by 61% (SSO 2011).

From here arises that Macedonia is a net importer of dairy products. Main import countries of milk and dairy products are: Slovenia, Germany, Croatia, Serbia, Montenegro, Bosnia and Herzegovina, Czech Republic, Bulgaria, Greece, and France (MKchamber, 2012).

Table 3. Import/Export of milk and dairy products

Year	Import	Export
2008	4 390 379	19 415 319
2009	2 203 974	26 441 381
2010	3 274 670	25 132 352
2011	3 277 166	31 472 780

Source: State Statistical Office 2009-2012

Discussion

The Dairy sector in R. Macedonia is consisted of many farmers that keep breeds for both milk and meat production, but there are also farmers who specialize in high productive milking cows. This specialization means investments in modern production equipment and facilities that comply with the quality and safety standards. These dairy farmers invest in milking equipment, improved housing, milk storage equipment, fodder preparation, breeds and breeding, etc. Small scale dairy farming causes increase in the cost of collecting milk and cooling equipment (lacto-freezers). Small family farms are characterized by inappropriate feed stocks for winter nutrition which has a significant impact on seasonal milk production. Low milk quality is the result of lacking knowledge and orientation on preserving quality hygienic safety of milk but also the need to harmonize legislation in the field. Animal production in the small, individual farms was characterized by low degree of modernization and low standards in hygiene terms.

The analysis of the sector has shown constant decrease in the number of animal stock, which is additionally enhanced by the recent turbulences in the dairy sector. The collection of milk is organized in different ways, varying from: the dairies collecting the milk from the "larger farms",dairies having milk collection centers with milk cooling tanks (lacto-freezers), and individual farmers delivering the milk to the dairies directly.This situation creates investment problems for the investors in the dairy sector

in terms of upgrading milk quality and also because of the high transaction costs of milk collection.The relations between the dairies and the farmers are mainly regulated by contracts, evaluating milk on quality basis.Contract enforcement is often costly and inconsistent. This problem experienced by most of the countries in transition is manifested by payment delays or non-payments for delivered products to the dairies, causing problems in the essential cash flow for the farmers. Many farmers' sale milk and dairy products on green market which has advantages those farmers are paid at once, low prices for some products (cheese) for consumers with low income. Disadvantages are low hygienic conditions, poor product quality and high labor costs. Furthermore, farmers do not feel that they rely on the dairies' own measures for milk quality, since the large dairies sometimes misinterpret the measures in their favor. On the other side the biggest problem often embraced by the dairies is the problem of opportunistic behavior by farmers, in terms of inconsistent milk. Moreover, the variations in raw milk quality causes further problems in the supply chain affecting milk shelf life, and causing inconsistence in product's quality and taste. So, the need of additional investments in on farm machinery like milking and cooling equipment, and in animal welfare standards are believed to have a positive effects on the entire dairy sector. High prices of inputs and especially the expensive animal feed is also causing problems in the raw milk production. Feed purchase tends to raise production costs making it non-profitable. Many farms face low milk production output which is followed by expensive production and low production efficiency.

Dairy industry lacks specialization of production, narrowing production to some products would raise production efficacy, high costs for collecting and delivering milk from the producer to dairy plant. Presently, when there is lack of purchase raw milk, as the milk sector problem is underdeveloped payment system for milk quality. Low productivity follows insufficient development of new products. Dairy industry output is too low and cannot be considered competitive at the international level. Principal advantages of the dairy processing industry are: low labor costs, low input costs (milk); technologically well equipped, modern equipment, high expertise and trained personnel.(Sekovska 2011)

Based on this study the conclusions derived point development of the Macedonian dairy sector we can note lot of factors considered to be responsible for slow dairy development in Macedonia. At the farm levelit is considered reasonable to focus on ensuring high-quality feed and improving hygienic conditions and animal welfare. With different types of subventions by the government, can increase livestock number, increase raw milk production on farm and improve milk quality (Bunevski et. al.,). In dairy industry measures may include develop payment system for milk quality, extensive training in the area of marketing, management, supply chain, and credit schemes for small farmers. Regarding these data it can be perceived that the primary milk production has a potential to grow.

Conclusion and future perspectives

Capacity building and investments should take place to solve the subsequentproblems:

Improve the raw milk quality in terms of hygienic and fat and protein content;

- Ensure the raw milk supply via increasing the milk yield per cow and thefodder hectare via an advanced compound fodder strategy;
- Raising the profit per cow as a precondition for the farmers decision forbuying more cows and investing in modern stables;
- Strengthen dairies on modern scientific dairy processing technology whichwill enable them to develop new products;
- Strengthen dairies to achieve to international hygienic standards, ISOcertifications,HAASP and waste water treatment, and
- Strengthen dairies to get export numbers and permission, since only 2 of themtoday has export licence.To develop the preceding matters, a specific governmental policy is required for thedairy industry, in the following areas:
- Land policy - aimed at land transfers that contribute to efficient farming byencouraging land consolidation. Such policy could be helpful in the moreproductive (flat) areas, where land parcels are still relatively small;
- Regional policy – aimed at organizing the farmers, both small and large-scale,in the most effective governance structure, and to support niche markets, and
- Facilitate technical and institutional modernization to increase productivityand efficiency in the sector by supporting up to date research and extensionservices to farmers and by ensuring as much as possible market transparencyproviding information for producers and processors on supply, demand, andprices, considering the trade of milk, milk quota, land and other agriculturalinputs.

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Review article

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LABOUR MARKET IN SERBIA - AN OPPORTUNITY OR LIMITATION OF ECONOMIC GROWTH

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Summary

This raises the question of why some countries based their economic power to human resources, the knowledge economy and large investments in science, while others see their citizens primarily as a social category which requires the cost of education, medical treatment, social protection, salaries and pensions? The answer lies in the concept of social development, that is, whether investing in people is considered as an investment or cost. The Company's investment in human resources, education and science, the investments are those companies that are leaders of development and their economies recorded the highest growth rates in recent history. Opposite them are the companies that have not yet recognized the importance of education and investment in people as the most important resource and a factor of development. Such companies are on the margins of development, marginalized and occupied "internal" problems, unaware that standing in the village, in the context of economic growth, the reverse. Serbia at this moment belongs, unfortunately, this second group of countries that do not understand the full meaning and significance of human potential. Under certain conditions, it is possible to reverse the existing concept and establish an open and developed labor market that will be the engine of development and a key factor of economic growth in Serbia.

Key words: *labor market, economic growth, education, jobs, employment*

JEL: *J60, Q10*

Introduction

The labor market in Serbia in the political, social, and even economic analysis considers mainly through the prism of social context, the problem of unemployment and the load with which it must deal the most responsible in the country. Few people in the labor

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market and its development, see opportunities and potential for economic growth. This is largely justified because in our reality there is almost no labor market in the full sense of the term. As a relatively small country, Serbia, due to a number of different circumstances did not develop the labor market - it is shallow, underdeveloped, followed by low labor mobility, devastated transition downturn in conditions of political instability, wars and economic sanctions. Bad circumstances in the environment are supplemented by internal failures in the education system, the disastrous privatization and polarization (politicization) of the public sector in the field of employment. Mass recruitment and hiring party (incompetent and unskilled) personnel throughout the public administration and public enterprises both at the national and at the local level, entirely undermines the idea of any free labor market. That terrible pressure on public sector employment has led to the paradox that the average wage in the private sector are significantly lower, position and safety of employees getting worse, a swollen administration ever greater burden of the already powerless Serbian economy.

Above all, for decades what has been completely missing is a clear link between the needs of employers for labor and an education system that now sees no need, is not respected and ignored. Therefore, in the present moment, there are no key assumptions for the establishment of market economy in the segment of the need to work and supply of labor. The needs of employers and the labor supply is, to a large extent, they do not match or there are clear indications that the "labor market" -offsets those needs. Another problem is poor demographic trends in terms of a dramatic decline of the birth rate, an aging population, the exodus of young people to foreign countries and an unprecedented concentration of population in large cities, particularly Belgrade. It is clear that in these circumstances the labor market can hardly be a function of economic growth and development.

On the other hand, many countries of the world are in the labor force and the labor market based their development, primarily the so-called. Asian Tigers (Taiwan, South Korea, Hong Kong, Singapore), also Japan, China and, of course, the most countries of Europe, USA, Australia and others. What is common to all these countries are large investments in education and adapting competences and knowledge workers to the real needs of the labor market and employers. This is the key formula that all these countries enabled stable and sustainable growth over a long period of time with high growth rates. Many of these countries are active "importers" of labor, particularly those of professional and highly educated (most notably the United States that have the best educational system in the world, while not asking for the cost of experts "imported" from around the world), which guarantees economic development.

In order Serbia turned his weakness into an opportunity, and that the labor market becomes a factor of development, and not as a limitation, it is necessary to follow the examples of success. They have enough, and all have in common that they have invested in education (Serbia invests many times less in education than in the developed countries). It is understood that a parallel must work on creating business environment that will improve the competitive position of Serbia in the last five or six years oscillates

in the global rankings of competitiveness about 95 seats out of 145 countries. On this list, Serbia is in the company of Kenia, Tajikistan, Mongolia, Honduras, Nicaragua, Cambodia and others. The only European country in this group apart from Serbia Albania. This position says that Serbia needs structural reforms, institution building, infrastructure, new technology, the establishment of the capital market and the labor market. It sounds paradoxical, but about a series of errors and omissions in education, economic policy, privatization of Serbia has both excess and shortage of labor. Despite around 750,000 unemployed registered with the National Employment Service, many jobs remain unfilled for years. Due to the poor structure of unemployed persons observed through different aspects (age, educational profile, gender, work experience, etc.) Even if (hypothetically) during a month in Serbia opened 750,000 jobs employment would, in these circumstances, found barely third of the unemployed. So, in that situation would have to "import" half a million workers (?!). Why is this so, the answer should be found later in this paper.

Economic indicators in Serbia and the problems of the previous development

Serbia is like the entire world, seriously shaken by global economic crisis whose end is several times announced, but is now seven years after the outbreak of the crisis clearly that the long-awaited end is not in sight. It is no longer the point of crisis only in poor economic indicators, the possibility of bankruptcy of entire countries, rising unemployment and a simple decline in living standards. On the basis of the latest crisis lies primarily unsustainability of the world economic order, which for decades increased the gap between rich and poor. Therefore, a multitude of social, political, geostrategic, religious and other factors is incorporated in the latest economic crisis of the globalized world. Liberalism as a concept and a key mantra of globalization has been left out today and his fiercest advocates and theoreticians are faced with the realities of the modern world and threats such as catastrophic climate change, resource constraints, potential regional (and expanding) armed conflicts, migration and migration of eastern peoples westward. The current crisis in Syria and the wave of refugees from that part of the world to Europe is only an announcement of "the great migration" to what will surely come if it does not abandon the current model of global economic order (Chmieliński, 2013).

Serbia is the last country in Europe where the transition is still ongoing. Collapsed economic structure from the communist period, which existed in a closed economy and in the former Yugoslavia, should be replaced by a new, more flexible structure which will optimally exploit the potential of Serbia and ensure steady economic growth. Do you go in the direction of development of the industry or agriculture is a secondary issue in relation to the need to create a business environment that will allow businesses that, in accordance with their interests, activate dormant and inactive resources Serbia (Vojnović et al., 2014). In creating this environment we have not had too much success, and the post-crisis period is a new chance and therefore it is necessary to do jobs that will benefit the economy and citizens. The economic crisis has brought into question many of valid doctrine and approach to the crisis is moving from whether to save or increase spending, to whether they should intervene in the direction of help heavily

indebted countries and to rehabilitate the banking sector or not.

Economically sustainable development of Serbia in the long run is not possible at the current way the GDP growth based on domestic demand growth caused by foreign loans and privatization revenues. The consequence of this growth is a constant deficit of foreign trade balance, wage growth above productivity growth and ongoing inflationary pressures. In the current concept of development more than 4/5 of the capital inflow of loans and foreign direct investment went toward unshared sectors (banking, trade, real estate, transport, telecommunications), while the exchange-sectors (industry, mining, agriculture) that only they can improved the trade imbalance remained only 1/5 of the capital. This situation is untenable especially because we can no longer count on revenues from privatization and additional borrowing. This period has been completed and have left us but to reforms in all areas attract foreign direct investment in the aforementioned exchange-sectors and activate the domestic capital in this direction (Stojadinović-Jovanović, Dašić, 2015).

Table 1. Key macroeconomic indicators Serbia 2008-2015.

	2008	2009	2010	2011	2012	2013	2014	2015
Gross domestic product mil euro	33,704.5	30,654.7	29,766.3	33,423.8	31,683.1	34.262,9	33.059,1	33.008,3
Gross domestic product, per capita, in euro	4,585.5	4,187.3	4,082.4	4,620.4	4,401.0	4.783	-	-
Gross domestic product, real growth, in %[1]	5.4	-3.1	0.6	1.4	-1.0	2,6	-1,8	0,5
Prices and the expences of life, growth rate								**January-April**
Consumer price, the end of period	8.6	6.6	10.3	7.0	12.2	2.2	1.7	1.9
Foreign economic exchange, in mil. euro[4,5,6]								**January-April**
Goods export	7,428.8	5,961.3	7,393.4	8,441.4	8,738.9	10,996.7	11,157.0	3,783.6
Goods export, %	15.5	-19.8	24.0	14.2	3.5	25.8	1.4	4.2
Goods import	16,283.0	11,327.0	12,423.5	14,250.0	14,716.7	15,469.0	15,526.3	5,225.2
Goods import, %	17.9	-30.4	9.7	14.7	3.3	5.1	0.4	6.2
The deficit of the goods exchange	-8,854.2	-5,365.7	-5,030.1	-5,808.6	-5,977.9	-4,472.3	-4,369.2	-1,441.6
Balance of payments, in mil. Euro								**January-March**
The deficit of the current transactions (BPM6)[5,8]	-7,126.3	-2,031.8	-2,036.7	-3,656.0	-3,671.4	-2,098.3	-1,984.7	-449.8
The deficit of the current transactions, % GDP	-21.1	-6.6	-6.8	-10.9	-11.6	-6.1	-6.0	-

	2008	2009	2010	2011	2012	2013	2014	2015
The deficit of the current transactions (BPM6)[5,8]	-7,126.3	-2,031.8	-2,036.7	-3,656.0	-3,671.4	-2,098.3	-1,984.7	-449.8
The deficit of the current transactions, % GDP	-21.1	-6.6	-6.8	-10.9	-11.6	-6.1	-6.0	-
Foreign direct investments, net, in mil. Euro[5,8]	2,485.7	2,067.8	1,133.4	3,319.6	752.8	1,298.1	1,236.3	235.3
Monetary and foreign exchange indicators, the end of period								**January-April**
Foreign exchange reserves PBS, mil. Euro	8,162	10,602	10,002	12,058	10,915	11,189	9,907	10,534
The value of US dollar in regards to dinar, The average period	55.76	67.47	77.91	73.34	88.12	85.17	88.54	108.92
The value of euro in regards to dinar, the average period	81.44	93.95	103.04	101.95	113.13	113.14	117.31	121.16
Foreign currency savings of the population in mil. euro	4,775	6,014	7,106	7,611	8,272	8,418	8,525	8,639
Employment, wages and pensions								**January-April**
No of employees, average, in 000	1,999	1,889	1,796	1,746	1,727	1,715	1,698	1,697
Actively unemployed persons, average, in 000	756	747	744	753	762	775	767	761
Unemployment rate, MOP	13.6	16.1	19.2	23.0	23,9	22,1	18,9	19,2
Net wage, average period, in dinar	32,746	31,733	34,142	37,976	41,377	43,932	44,530	42,714
- real growth rate	3.9	0.2	0.7	0.2	1.1	-1.5	-1.5	-1.4
Average pension, average period in dinars	17,660	19,788	19,890	21,285	22,450	23,378	23,553	22,722
- real growth rate	14.3	3.3	-5.9	-3.6	-2.2	-3.4	-2.1	-5.0

Source: Republican bureau for statistics, 2014; (http://webrzs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=1)

If even a cursory look at the data from the review in *Table 1*, the first conclusion is stagnation in some areas slightly declining in some slight recovery. All in all, not enough to catch up those who are twenty and thirty years ahead of us. Therefore, Serbia is still relatively lagging behind and is quite far from being able to even closer to some of us for decades looked to the back like so many countries. "Eastern bloc". Catching up with the most developed countries of Europe has a realistic plan for the second half of the 21 century. After-crisis year 2008 until today, it is clear that Serbia simply not coped in such circumstances and that so far stalled. The moves of the new government, especially its rhetoric correlate with what should be the goal and the path, but we should wait for the results.

Gross domestic product in 2015 will not reach the 2008 year will be slightly below the strongest evidence of stagnation and lagging behind Serbia. In the reporting period we are in 2009, 2012 and 2014 recorded a negative growth rate of GDP (-3.1%, -1.0% and -1.8%). In 2015 we will despite the negative forecasts by the IMF and the World Bank (-0.5%) manage to blow up the GDP by 0.5 to 1%. From the *table 1* we can see a clear correlation mentioned negative rate and the inflow of foreign direct investment (FDI). Namely, in the aforementioned years falling GDP there was also a significant drop in FDI. So, one of the most important factors of growth of Serbia in the entire period, absent or decreased (with around 2.5 billion. In 2008 to $ 1.2 billion. $ In 2014). Forecast for 2015 is also bleak - only about a billion dollars of FDI. This slowed the inflow of foreign investments is the consequence of the global crisis but, on the other side, and the consequences leftover of reforms and creating a healthy business environment. Unreformed public sector in Serbia is becoming a huge burden and stone around the neck and on the state budget and for economic growth. The losses of the public sector redundancies, over-indebtedness of public enterprises, the party managing and unwillingness to change them would hamper any effort towards development. Reforms that a whole decade, and announce in many areas does not happen. All laws adopted by the National Assembly of RS from 2000 to date were "reform." A reform of the no sign. This just confirms the unwillingness of society as a whole to make a break with the past and accept the standards that apply in our immediate neighborhood - EU, which is so "dedicated to" strive for.

In the reporting period had a relative price stability, so that we during 2013 and 2014, fully steady inflation. Unfortunately, this good result is the consequence of the dominant – domestic demands due to real wage cuts, which in those years recorded negative rates. Although this trend has a negative effect on the standard of the citizens of Serbia, it is a good circumstance to us increasing wages above productivity growth as soon as a regular case. When it comes to the export of good news is that it grows in the reporting period (with the exception of the crisis year 2009), especially after reaching full production of Fiat's plant in Kragujevac, in 2012. Therefore, we have achieved a significant deceleration and decline in foreign trade deficit, which will be reflected in the monetary sphere. Foreign currency reserves of Serbia during these eight years have a certain stability and oscillate around 10 billion. Euros, while deposits in banks

recorded a slight increase and is currently at about 8.5 billion Euros. These indicators can guarantee a respectable level of liquidity Serbia but in terms of the needs of growth and development are insufficient to significantly accelerate the economy (Stojadinović-Jovanović, Dašić, 2015).

At the end of the analysis of macroeconomic indicators Serbia will look to the data on employment and earnings that are most important to citizens and their families. During this period, the number of those who reported to work has been reduced by over 300,000 (with $ 2 million in 2008 to 1.7 million in 2015). It is exactly 15% fewer employees. The number of persons registered with the National Employment Service throughout the entire period was about 750,000 job seekers. The unemployment rate according to the Labor Force Survey from 13.6% in 2008 grew to 23% in 2011, that in 2015 decreased to 19.2%. What happened to those 300,000 fewer employees if the records of the National we have 750,000 unemployed stable and relatively significant fluctuations in the unemployment rate? At this point we can only assume (not perform the correct conclusion) that is part of the staff left Serbia, part went to the informal economy, part (unfortunately) lost in the negative natural increase, and a part of the former unemployed, discouraged stepped forward with "labor market" (Kuzman, et. al., 2013). Below we will explain in detail these paradoxes and trends when it comes to labor force in Serbia. When it comes to pensions noticeable is their constant real decline after anything reasonable growth in 2008 (except for political reasons, others did not) of 14%. It is similar with real earnings that after admittedly modest 2008 growth of 3.9% (only the Serbian raise salaries and pensions in the year of the biggest economic crisis?!), mostly stagnated the last three years, posted a real decline of about 1.5 % per annum.

Characteristics of the labor market and the economic crisis in Serbia

The economic crisis has brought Serbia a far greater drop in the number of employees in relation to the drop in GDP, which led to serious social implications. The chart shows the fact that 300,000 fewer people employed for a period of eight years (2008 to 2015), and that the GDP has remained at the same level shows that the crisis affects in the first place employees and their families. An even greater decline is recorded in the so-called number of employees. Informal employment or work in the gray zone without a formal contract which does exact indicators (Zakić, 2014). However, indirectly, it can be concluded that they are employed in the informal zone are far less protected than workers employed and particularly those in the public sector. For this reason, it can be assumed that the percentage of those who are in the gray zone jobless far above the reduced number of employees in formal employment (for example 15%. 300.000 employees). Number of employees in Serbia in the so-called. Gray zone ranges (according to most estimates, including Labor Force Survey), about half a million. So, it is very likely that during the period in the gray zone lost their jobs between 150,000 and 200,000 employees.

Table 2. Basic sets of the population aged 15 years and over

Republic of Serbia [1]									
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Total population age 15 and over									
Total	6512300	6356632	6350328	6350328	6317887	6297560	6277697	6123967	6098785
Active population, age 15 and over									
Total	3323716	3241209	3267107	3119419	2964966	2924352	2929481	2966838	2984408
Employed population, age 15 and over									
Total	2630691	2655736	2821724	2616437	2396244	2253209	2228343	2310718	2421270
Unemployed population, age 15 and over									
Total	693024	585472	445382	502982	568723	671143	701138	656120	563138
Inactive population, age 15 and over									
Total	3188584	3115423	3083221	3230909	3352921	3373209	3348215	3157129	3114377
Activity rate, %									
Total	51.0	51.0	51.5	49.1	46.9	46.4	46.7	48.4	48.9
Employment rate, %									
Total	40.4	41.8	44.4	41.2	37.9	35.8	35.5	37.7	39.7
Unemployment rate, %									
Total	20.9	18.1	13.6	16.1	19.2	23.0	23.9	22.1	18.9

Source: Republican bureau for statistics, 2014;

[1] Since 1999. No data from Kosovo and Metohia

If we look at the basic contingents in the labor market clearly we perceive a disturbing downward trend in the total population aged 15 years and will be nine years old -for almost half a million fewer people in this age category. This trend follows the active population aged 15 and over. On the other hand, the number of unemployed persons fluctuates with the ups and downs of between 450,000 and 690,000 people. The last three years saw a significant drop in the number of unemployed persons in Serbia which, in itself, does not mean that the reduced number of persons found employment in Serbia. The portion of the unemployed is discouraged reduced chances of employment left the labor market and stopped looking for work, while the other part is left Serbia and looked for a job abroad (Erokhin, 2014). Secure certificates are not jobs for the number of lower unemployment is a continuing decline in the number of employees in the entire period. The result of these trends is reflected in the rate of activity and employment, which has been constantly decreasing. The activity rate has fallen below 50%, which, compared with the EU average of 70% of serious untapped potential (*Table 2*).

Table 3. No of employees, age 15 and over, by sectors KD2010

	2010	2011	2012	2013	2014	2015/I trimestar
Republic of Serbia [1]						
Total	2396244	2253209	2228343	2310718	2421270	2494346
A - Agriculture, forestry and fishing	532969	478111	467104	491952	510343	495660
B – Mining	23316	31278	25844	22119	27595	25883
C – Manufacturing industry	401711	387255	379614	394424	381121	398323
D – Supplying by electrical energy, gas, steam and sewerage	36293	31155	35377	37478	37758	26816
E – Water supplying; management of wastewater, controlling the process of removing waste and similar activities	41097	35407	33844	33651	37516	37760
F - Construction	120689	118726	114853	109798	107504	107618
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	326283	300600	302225	296869	304864	357183
H – Traffic and warehousing	125563	123752	129482	134431	130721	124578
I – accommodation and food servicing	71610	62081	61528	58855	59782	83339
J – Information and communication	47682	44387	33638	47703	54718	56018
K – Financial and insurance activities	44852	43691	42330	42713	42022	48654
L – Real estate	3268	3078	2309	2520	2788	4877
M - Professional, Scientific and technical activity	57053	54733	51955	62189	67027	57116

	2010	2011	2012	2013	2014	2015/I trimestar
Republic of Serbia [1]						
N - Administrative and support service activities	37694	49079	49374	48547	51085	56866
O - Public administration and defense; compulsory social insurance	120459	119112	117786	131356	141658	144684
P - Education	159381	150023	151452	149678	156697	158833
Q – Health and social protection	157137	144412	142041	130542	142671	154575
R – Art, fun and recreation	36964	26385	31332	38931	43693	50740
S – Other service activities	47627	35939	38836	46369	46372	46359
T - Activities of households as employers; activities of households that produce goods and services for own needs	3770	12237	17223	29817	74571	57832
U - Activities of extraterritorial organizations and bodies	825	1769	196	775	766	634

Source of data: Republican Bureau of Statistics

[1] since 1999. No data for Kosovo and Metohia

If analyzed to which activities are directed to key contingents of active persons in Serbia come to the interesting data and trends when it comes to agriculture, industry, manufacturing, construction, trade and administration? An interesting fact is certainly the number of employed in agriculture (*Table 3*). He is in the reporting period is around half a million employees, which is slightly above 20% of the total number of employed persons in Serbia. This percentage was significantly higher (about 27%) in the period 2001-2010. Compared with developed countries in Europe where the number of employed in agriculture is moving mainly between 5 and 7% in the majority of countries, and rarely exceeds 10% and in traditionally agrarian countries like the Netherlands and France (except Serbia only Romania still has a high percentage employed in agriculture, which exceeds 25% of the total). The question is how Serbia such a large number of employees in agriculture. Unfortunately, this figure is not the result of expansion of our agricultural production is already one more sociological

and social phenomenon as a result of prolonged transition of Serbian economy. This employment is compulsive and significant part a consequence of privatization in which a large number of people left without a job in large industrial centers. These are people who have been for many years, "one foot in the village and another in the city," and finally, after the transition had to turn to agriculture because for them there was no space in the failure of industrial facilities. They and their family members as unpaid members of households formed this large contingent of "employed in agriculture," not because it was their wish, but because it is for them to rest a little perspective is in other areas. This significant percentage of the number of employed in agriculture not commensurate impact on improving its efficiency (Milićević-Langović et. al., 2014). Although there are some good progress on the modernization of our production is still inefficient, fragmented landholdings, only about 2% of arable land is irrigated, we fail to renew cooperatives and organized appearance in export. Country through registration of agricultural households, the creation of an agrarian payments, various credit arrangements and modest subsidies (compared to the EU countries) made partial progress in a positive direction. It's still not enough, because the fact that we have reached only about 2 billion. Euro exports, which is 35 times smaller than the already mentioned Netherlands speaks more clearly than where we are at this moment. Good geographical position, good land and good climate are not sufficient conditions for the successful development of agriculture. It takes a lot more work on education and training of farmers, their association and rejuvenation in order to reach the desired goals (Ševarlić, 2014).

Number of employees in manufacturing, mining and, in particular, the construction industry recorded a constant decrease. Deindustrialization Serbia is almost finalized (Krstić et. al., 2013). At the same time there is a constant increase in the number and share in the structure of employment in trade, transportation, services, information technology and banking. This confirms the thesis that the twenty-first century vectors services and production to be relocated to a distant country such as China, India and others. Administration and the number of employees in state administration constantly increases by performing additional pressure and load the real sector that can hardly themselves to support. Number of employees in the public sector in Serbia (national, provincial and local administrations, public utilities, education, health, military, Interior Ministry and institutions) exceeding 600,000 employees and makes a huge burden on the budgets of the Republic and municipalities, as well as the already devastated economy. Besides this large number of people even bigger problem is their structure in terms of education, business skills and age (Mirović, Bolesnikov, 2013). For decades, the public sector are filled by incompetent cadres of the party at the expense of professional and business skills. For example, in health care is a growing number of non-medical staff at the expense of doctors and nurses in public enterprises and local governments swells unprofessional, incompetent and often corrupt administration on account of operational and manufacturing jobs.

Table 4. Population age 15 and over,by education and activity

	2013	2014	2015/I trimestar
	Active population	*Active population*	*Active population*
Republic of Serbia [1]			
Total	2966838	2984408	3088636
No costs	18308	15672	9888
Incomplete elementary education	136676	135880	101354
Elementary school	451761	426142	416249
High school	1725409	1731013	1825700
College	203439	183727	197924
Faculty, academy or college, MSC and PHD	431245	491974	537520

Source: Republican Bureau of Statistics

[1] since 1999. No data for Kosovo and Metohia

If we analyze the educational structure of the active population in Serbia comes also devastating. More than half a million active population is almost functionally illiterate - there is no school or have not completed primary or only primary school. It's good that this contingent from year to year, though significantly reduced. Among active residents, the largest number of those with high school and he is a little over 1.8 million citizens. In the current economic situation in Serbia, almost all of these groups are becoming difficult recruit and vulnerable (*Table 4*). University degree is no longer a safe ticket for the labor market, so that serious reforms are necessary both in education and training for work and towards creating better conditions for entrepreneurship, investment and economic development.

On the labor market, in addition to Serbian problems of education, training and preparedness for war and perceived vulnerability of certain categories of the population, especially in terms of their age. Big problems has young population under 35 years where he observed a large drop in the employment rate on the one hand and also jobless growth. On average today works only 55% of young people in this category while 27% are unemployed. Part of the active population aged 55 to 64 years old also from year to year is attracting a lower rate of employment (today only about 37% of the active population of this group) and an increase in unemployment (about 12% actively looking for work). Transition is both populations made vulnerable by the older crowd out of the labor market due to the collapse of many companies in the privatization and sanctions no chance of finding another job, and the younger ones are not created jobs in new companies due to a lack of investment and entrepreneurial environment that make them activated in this direction. From other vulnerable groups should be said that they improve the position of women in terms of equal access to the labor market, while the situation of Roma remains extremely difficult due to the fact that more than 50% of the working population in this population is not employed.

The legal effort to consolidate the labor market

In response to the economic crisis in the previous period, especially immediately after the outbreak of the 2008 crisis measures to mitigate its consequences included the almost always attempts to prevent adverse effects on the labor market. Simply, the task was to preserve jobs, bearing in mind the fact that employees are the first victims of the economic crisis. The situation was similar in Serbia, where the government tried various measures to mitigate the consequences for their economies. When it comes to the preservation of jobs and the consolidation of labor market measures have gone in several directions and levels:

• General measures to stimulate the economy, which included the agreement with the IMF in 2009 worth 3 billion euros. The key aim of these measures was to support the economy through subsidized loans, loan guarantee schemes and stimulate consumption through consumer lending citizens. Support was provided to a large number of public companies and large giants such as RTB Bor and others. The condition for granting subsidized loans was to retain the same number of employees during the support. During 2009, nearly 12,000 companies have used this support and withdrew 950 million worth of loans subsidized by the state for which it is allocated 30 million euros from the budget. The government, through the Fund for Development created a program of loans for beginners in business (start-up) whose height ranged from 0.5 to 1.3 million dinars, repayment period up to 5 years, grace period of one year. In 2009, for these purposes from the budget were spent 4 billion. RSD 2010 only about 2.2 bln., and the effect is according to the Ministry of Finance was the 9000 newly employed entrepreneurs. Apart from this program have been created programs aimed at balanced regional development and support to the economy in underdeveloped areas and devastated municipalities, through loans with interest rates of 2%, a repayment period of 8 years and a grace period of 3 years. On the other hand, commercial banks were approved in 2010 about 250 million. EUR consumer loans to citizens.

• Programs designed for the unemployed are adapting measures of active employment policy (AEP) conducted by the National Employment Service (NES) possessing a modest budget of about 35 million euros. One of the most popular programs is "First Chance" is intended for youth employment to 30 years with no work experience. The state has secured the earnings for newcomers in duration from 6 to 12 months, the employer has the obligation to take over at least 12 months while maintaining the same number of employees as before the start of the program. In the period 2009-2011. the program reached more than 40,000 young as improved statistics of youth employment during this period. Besides the first chance at a larger scale is realized and the public works program intended for the socially disadvantaged and difficult employable categories such as older than 50 years, Roma and persons with disabilities. During 2009, this program includes about 20,000 persons and its implementation had a primarily social importance to the entire territory of Serbia. The effects in terms of permanent employment of participants in public works were left behind. In later years, the volume of funds and the number of participants is significantly reduced.

In 2009 enacted the Law on professional rehabilitation and employment of persons with disabilities who predicted quota for employment of persons with disabilities and penalties for non-compliance of employment that are paid by employers. This law, based on positive discrimination, enabled the employment of a significant number of persons with disabilities through penalties are provided serious revenues (in 2011 almost 2 billion. Dinars) to subsidize employment of persons with disabilities. The state, in addition to these measures, through the NES and subsidize job creation, organized and financed training and retraining, which further stimulate employers to employ.

• Program increased social protection during the first years of the economic crisis were the result of a decision that social protection is the only item in the Republic budget to be increased. "Only two programs focused solely on the poor - family financial support (called MOP) and child benefit. In both programs, recorded a relative reduction before the crisis – value of child allowances decreased from 0.42% of GDP in 2005 to 0.3% of GDP in 2008, and the amount of MOP from 0.16% to 0.14% . The individual level of benefits has fallen by almost half over the period from 2002 to 2008 in relation to the minimum wage. However, during the crisis, the share of social spending in GDP has increased slightly, confirming their inner potential to stabilize. However, the increase was not the result of expanding the scope of existing programs or introduce new measures. In response to the deteriorating social situation and growing poverty, the government has accelerated the process of adopting the Law on Social Protection (adopted in March 2011). " The new law provides for increase social benefits for nearly 50%, but its effects are enabled poverty reduction for only a few percentage points. In 2011 the Government with employers' associations and trade unions signed a socio-economic agreement whose objectives are directed towards supporting economic growth and increasing the competitiveness of Serbian economy while preserving the existing level of employment and macroeconomic stability (Arandarenko, 2011).

All these intentions, unfortunately, failed to stop under employment in Serbia in the period of crisis from 2008 onwards resulted in the loss of more than 300,000 jobs. The logical question is why economic and social measures in a period not to effect better economic indicators when it comes to the labor market?

There are several reasons for it and on this occasion we will look at, in our opinion, the key. When making various measures of economic policy and crisis are not recognized, the characteristics of the labor market in Serbia, primarily its duality or dichotomy. The polarization of the labor market between formal employment versus informal employment shows no signs of convergence or rapprochement, but over time creates a growing gap and the tightness of formal employment for those employees who work in so-called. Informal zone. This duality is further reflected in the relations between employment in the public sector versus the private sector, wage employment versus self-employment versus paid work and unpaid modern labor market as opposed to the traditional labor market (Ševarlić et. al., 2012). All primary, former view segments of the labor market was virtually closed for secondary segments which prevents upward mobility in the labor market. Thus, the transition from the private to the public sector, the self-employed in

work for pay, from the informal to the formal sector is minimal and very limited.

Table 5. Dichotomy in the labor market in Serbia (2010)

Public– private employment	25:75
Formal – informal employment	80:20
Modern – Traditional employment	65:35
Work for pay – self-employment	65:25
Standard – vulnerable employment	67:33
Paid - unpaid	92:8
Sum is less than 100% because it excludes unpaid work Helpers	

Source: Republican Bureau of Statistics

Another significant reason for the relative failure of the measures is that they are primarily political character. Measures of economic policy and the labor market are targeted by certain segments of the electorate rather than segments of the labor market. When switching to a certain extent (public works, loans of the Development Fund, etc.) Would imply political arbitrariness and control in terms of who can and who can be the beneficiary and target groups of different measures. Development Fund, which is primarily directed at supporting small and medium enterprises began under various political pressures to give loans to large private companies and some failed socialist giants whose return is already in granting loans were questionable. Social measures are routed randomly and by inertia because the social map in Serbia have never done.

The third reason for the limited effect of the measures on the labor market is unfinished transition process in Serbia. Privatization is not complete, and the companies involved in the restructuring of over a hundred thousand employees who fall into the category of the most serious employable persons. Loss of a job for them, as a rule, means abandoning the labor market with no hope of finding another job. Social risks and political decisions these companies and their employees long kept out of the market, protected from coercive collection of suppliers and the taxman in a kind of anesthesia that certainly does not stop the deterioration.

The fourth group of the reasons lies in the restructuring of the public sector, inefficient and bulky state administration and the lack of ambience and infrastructure to attract investment. It is difficult to implement different economic measures aimed at attracting investment and new employment if there is no healthy economic environment and if investors at every step of trips omnipotent administration. Years of waiting for the building permit, corruption, poor road and rail infrastructure, mismanagement of

contracts and legal uncertainty are not good recommendations nor foreign, but for domestic entrepreneurs. Part of the measures to effect and not due to the fact they were escorted precisely those parts of the administration, which previously required reform.

Serbia has so far created a large number of strategic documents and action plans for employment which, besides platitudes and principles contain specific targets, measures and policies which should lead to a serious consolidation of the labor market. As in many other areas lacking tangible results and creates the impression that the government is chaos and there is no clear policy or the will to implement it. National Employment Strategy for the period 2011-2020. was adopted by the Government provides the following strategic directions and priorities ("RS Official Gazette", No. 37/11):

• Promoting employment in less developed regions and developing regional and local employment policy,

• Enhancing human capital and greater social inclusion,

• Improving institutions and labor market development,

• Reducing the duality in the labor market.

The National Strategy envisages as a general objective of increasing employment as well as individual targets to be achieved within a given period:

• Promoting employment in less developed regions and developing regional and local employment policies,

• Improving the quality of human capital through the development of career guidance and counseling as well as increase the competences of unemployed people to acquire knowledge and skills through the establishment of a system of short training. Also, this objective implies the recognition of knowledge and skills acquired through informal learning,

• The development of institutional capacity and the expansion of the active employment policy,

• Reducing the duality in the labor market by increasing formal employment at the expense of informal, mutual respect of rights and obligations of employees and employers through a flexicurity concept and creating equal opportunities for all in the labor market.

Taking into account the seriousness and good intentions of the creators of strategic documents must be kept in mind all the circumstances and credibility entities "responsible" for the achievement of these objectives. Overlook the fact that the main actors in the realization of the National Employment Strategy to be unreformed, bureaucratized and politicized institutions in advance leads to the realization of a large number of targets. For this reason, any strategy must be based on an imperative prerequisite reformed and professionalized institutions (Mihailović et. al., 2013). Mere enactment of the reform law (any law that was passed in Serbia in the last twenty years he grew proclaimed "reform" ?!) and their implementation by the unreformed institutions closer to that old story about the new wine and old corpses.

Conclusion

The answer to the question whether the workforce in Serbia factor of growth and development, or their limitation is not simply given, however, without any doubt is the fact that people are the greatest wealth of each country and its most important resource. This of course applies to Serbia. In our economic and social realities in recent decades that the most important resource is still only untapped potential and largely social burden the already strained state and the weakened economy. By analyzing the characteristics of the labor market in Serbia key findings indicate that it is shallow and underdeveloped, burdened by the dichotomy of "parallel worlds of work" where each have a certain lifetime jobs (public sector) and many acquired legal and customary privileges, while others on that shallow market can not even swim faced with uncertainty, insecurity and often deprived of labor rights. Serbia is still not a safe place to invest, nor was able to create a business environment to attract serious investors. Legal uncertainty, corruption, bureaucracy and politicization of all institutions are serious impediments to the free movement of capital, goods and labor in this area. Serbia's candidacy for membership in the European Union is an important and decisive step towards the establishment of a generally accepted value system in all areas, including in the field of labor.

Active working population will become an engine of development and economic growth in Serbia when multiple increase funding for the development of science and education. The result of such investments will be knowledge-based economy, where employees will have operational and usable knowledge required in the labor market. Internet and information technologies completely change the concept of education that focuses on increasing specialization and training to use different software as a tool for managing business processes. The concept of lifelong learning is no longer a matter of prestige, but a requirement for successfully performing tasks that require constant adaptation of knowledge and skills defined business objectives. In addition to investing in education, Serbia must invest heavily in the renewal of transport infrastructure, renewable energy sources (if they were able to achieve significant economic growth rate at this level of energy development, soon to face a large deficit in energy supply), stop the downward spiral of birth rate and aging population and to finally reform the public sector and administration. This would create the preconditions for the realization of all the human resources at our disposal and to come to the fore our natural talent and creativity that always expressive in circumstances of clear rules of the game. The fact that we as a nation, when it comes to sports, where rewards work, talent, perseverance and dedication, in the worst case, average, or what is more often the case, above the average of many major states, convincingly argues that we are the best when know the rules of the game (as in sports means). In our economic and social reality are not yet "clear rules", we have a weak and incomplete institutions, legal uncertainty, corruption, monopolies and centralization of the highest level. In this social messiness, we are economically inferior in comparison to others and perhaps here lies the answer to question ourselves as people often ask "why we go so bad."

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ТРЖИШТЕ РАДА У СРБИЈИ – ШАНСА ИЛИ ОГРАНИЧЕЊЕ ЗА ЕКОНОМСКИ РАСТ

Aleksandra Tesić[4], Vladimir Ilić[5], Anastazija Tanja Djelić[6]

Резиме

Поставља се питање зашто неке државе заснивају своју економску моћ на људским ресурсима, економији знања и великим улагањима у науку, док друге своје грађане виде првенствено као социјалну категорију која изискује трошкове образовања, лечења, социјалне заштите, плата и пензија? Одговор лежи у концепту развоја друштва, односно да ли се улагање у људе сматра инвестицијом или трошком. Друштва која улагања у људске потенцијале, образовање и науку, сматрају инвестицијом су она друштва која су лидери развоја и чије економије бележе највеће стопе раста у новијој историји. Насупрот њима су друштва која још увек нису препознала значај образовања и улагања у људе као најважнији ресурс и фактор развоја. Таква друштва су на маргинама развоја, скрајнута и окупирана «унутрашњим» проблемима несвесна да је стајање у месту, у контексту економског раста, кретање уназад. Србија у овом тренутку припада, на жалост, овој другој групи држава која не схвата пуни смисао и значај људског потенцијала. Уз одређене предуслове, могуће је преокренути досадашњи концепт и формирати отворено и развијено тржиште рада које ће бити мотор развоја и кључни фактор економског раста Србије.

Кључне речи: *тржиште рада, економски раст, образовање, радна места, запосленост*

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QUALITY OF RESEARCH RESULTS IN AGRO-ECONOMY BY DATA MINING

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Abstract

Data Mining (DM) through data in agroeconomy is a scientific method that enables researchers not to go through set research scenarioes that are predetermined assumptions and hypotheses on the basis of insignificant atributes. On the contrary, by data mining detection of these atributes is made possible, in general, those hiden facts that enable setting a hypothesis. The DM method does this by an iterative way, including key atributes and factors and their influence on the quality of agro-resources. The research was conducted on a random sample, by analyzing the quality of eggs. The research subject is the posibility of classifying and predicting significant variables-atributes that determine the level of egg quality. The research starts from the use of Data Mining, as an area of machine studies, which significantly helps researchers in optimizing research. The applied methodology during research includes analytical-sintetic procedures and methods of Data Mining, with a special focus on using Supervised linear discrimination analysis and the Decision Tree. The results indicate significant posibilities of using DM as an additional analytical procedure in performing agro-research and it can be concluded that it contributes to an improvement in effectiveness and validity of process in performing these researches.

Key words: *machine studies, data mining, prediction, classification, supervised discrimination analysis, decision tree, effectiveness of agro-research.*

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Introduction

Application of Data Mining in the last ten years has brought to focus of scientific

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researches in agro-economy a significant methodological turn. Classical methods that subsum the normative-descriptive methods supported by classical multivariate statistical methods have become a basis for establishing machine studies, as a more productive and exact scientific method in agro-research (Bohanec et al., 2003). The method of machine studies gives a clear positive answer on the question whether a computer can execute functions that we conside thought (Alan Turing, 1912-1954). Machine learning is a set of processes which include: collecting new declarative knowledge, development and specialization of motor and significant capabilities through practice, structuring existing knowledge and discovering new facts and theories by observing and active experimenting (Breiman, 2001). This learning process includes knowledge acquisition, ie. learning new information of symbolic character and training, which means improvement of acquired knowledge, which is a equal to the way people learn. Machine studies includes two models, *learning based on examples* and *learning by observation and own discovery.* They produce two types of scientific knowledge: explicite knowledge that is represented by mathematical logic, production rules and systems alike, which are the subject of authors application, and those are data mining, using different techniques of the decision tree, production rules of discrimination analysis, neuron network models etc (Cherkassky, Mulier, 2007).

Research in the domain of data mining relates to the area of inductive learning and performing general laws based on insight in specific occurences – cases. The procedure of applying these methods implies the grade of validity of learned knowledge, so it is necessary to methodologically divide the set on a *learning set*, which is used for learning and a *test set*, which is used for testing learned knowledge (Stanojević, 2013).

Usefull inductive knowledge must have *predictive accuracy,* the percentage of success of classifying new, examples of using learned rules which were not considered, done by grading accuracy in classifying the method of cross-validation and the bootstrap method (Kohavi, 1995). The method of machine learning, especially the area of finding hidden knowledge, or data mining includes an iterative process of discovering patterns, whether automatically or manually, in a surrounding where there are no predetermined assumptions or hypotheses, and that is the research goal (Stanojević, 2013).

In general, machine learning is a special area of *artificial intelligence*[4] relates to the development of algorithms and techniques which enable computers to "learn" (Platt, 1998). The method of inductive machine learning creates computer programs by extracting rules and patterns of behavior from sets of data. Data mining is also known as a process of *knowledge-discovery in databases (KDD) or knowledge-discovery and*

4 **Artificial intelligence (AI)** is the area in computer sciences that studies intelligent behavior, learning and machine adaptation. Research in the area of Artificial intelligence is related to machine production with the goal of task automation from required intelligent behavior.

data mining[5] (Chang, Lin, 2001). Data mining is defined as a process of recruiting one or more computer techniques with the goal of automatic analysis and extraction of knowledge from data which are found in a certain data base (Witten et al., 2011). The purpose of data mining is to find and identify certain patterns and trends in data. All methods of data mining are used for induction based learning (Kantardžić, 2002). That is the process of defining general conceptual definitions by observing specific examples from which learning is being done (Stanojević, 2013).

Within the research analysis of available data in the area of agro-research was conducted, by applying statistical method of Artificial Intelligence and DM of classified methods, and the goal is identification of rules of classification of data in the area of agriculture, poultry raising and analyzing egg quality (Birch et al., 2003). The research used two techniques of DM, and those are supervised in learning by using discrimination lineal analysis and the Decision Tree (Maindonald, Braun, 2007).

1. Research methodology

The research procedure starts from defined and well grouped data, determining variables and using chosen methods with analyzing and interpreting received results (Mihajlović, 2014).

2. Data

The authors' research relates to research results of identifying key factors on egg quality. Data was grouped in two samples, and those are: sample A – first quality category, and sample B – second quality category. The sample contains 25 participants, while sample B contains 33 participants.

2.1. Variable[6]

Four characteristic of egg qulity on both samples were measured, and those are: X_1= yolk shadow[7], X_2 = yolk color[8],

5 **KDD (Knowledge Discovery in Databases) -** Technically KDD is the application of using the scientific method of data mining. With the goal of performing data mining, a typical model of the KDD model includes the methodology of extracting and preparing data as well as making decisions on actions that need to be taken with the goal of analyzing and data mining.

6 The data are taken from a study made by A. Johnston, Poiltry Division, Centra Experiment Farm, Ottawa Cyril H. Gouldeb, „Methods of Statistical Analysis", New York, John Wiley and Sons, Inc1952.

7 Out of interior properties, the freshness of an egg is valued the most, determined by measuring the height of the air chamber and density of the egg white. An egg no older than three days has an immobile air, smaller than 4mm (which is determined by illuminating-yolk shadow).

8 Intensity of color of yolk determines quality. Intensive yellow color indicates on an egg with more quality. It is measured by the Roš fan. Grade 1 signifies the palest and 15 a yolk with most color.

X_3= height of egg white[9] , i X_4 = egg white index[10]. The mentioned variables are determined as predictive atributes. The research goal is to identify the key variable which influences the classification of eggs in A and B cathegory (cathegory or class which are goal variables in our research – class of atributes) (Breiman et al., 1984).

2.2. Methods

Identification of key variables from X_1,X_2, i X_3, i X_4 can be identified as a typical problem of classifying, and it occurs in two procedural phases. The first phase, machine model of learning is trained and used as a training sample. The samples is organized in rows and collumns. One of the atribute collumns ie. the class atribute dominantly influences the quality of eggs. This phase is called *Supervised learning* (Sohl, Venkatachalam, 1995). The second step of the model tries to classify objects which don't belong to the training sample.

The authors used Supervised linear discrimination function in the paper, with using validation methods of accuracy of classification as follows: *cross validation*[11] and the *bootstrap* method.[12]

2.2.1. Linear discrimination function (LDF)

The goal of aplying this statistical method is to determine useful variable for the purpose of classifying.

In the first step, the method of supervised learning through linear discrimination of the function with continuous variables, while the *predictory variable of cathegories is A or B.*

The results show that the performance of classification is with a mistake of 1.7%, while the variance mistake in relation to total Wilk"s Lambda (within the MANOVA method) is of a small value with sa p=0,0 [13].

9 Quality of egg white is graded by breaking and egg on a flat surface and measuring the height of dense egg white, which is expressed by Hog units (HU).

10 An egg of good eating quality, has a flat yolk of bigger radius and egg white which is watery and covers a big area.

11 The cross validation method or rotational estimation divides the set of examples D on k mutually excludable subsets D_1,D_2,...,D_k of approximately same size by accidental method.

12 The bootstrap method represents a family of methods for estimating precision of prediction For the assigned set *n* the application of bootstrap sample is formed by accidental choice *n* examples from the set of examples, by switching.

13 MANOVA is the statistical method in analyzing general linear model when there are multiple independent variables with the goal of seeing their interaction and identifying differences between the groups.

Table 1. Performance of classification

Status	Value	p-value
Wilks' Lambda	**0.2593**	**0,0000**
Bartlett -- C(4)	72.8853	0.0000
Rao -- F(4, 53)	37.8470	0.0000

Source: Goulden, 1952

Sum of the result of LDF can't be reliable because the essential question is not being asked, which is the relevant variable for the research. According to the following LD function, the discrimination equation would be as follows.

$$Z = 12{,}21\ X_1 + 6{,}584\ X_2 + 4{,}923\ X_3 - 67{,}83 + 8{,}423\ X_4 - 254{,}467$$

Table 2. Linear discrimination

	Classification function		Statistical valuing			
Attributes	**A**	**B**	**Wilks L.**	**Partial L.**	**F(1,53)**	**p-value**
Yolk shadow	**12.214336**	15.720853	0.586076	0.442453	66.78682	0.000000
Yolk color	**6.584722**	6.917973	0.264190	0.981530	0.99734	0.322492
Egg white index	**4.922898**	4.976528	0.259857	0.997897	0.11169	0.739542
Egg white level	**8.423514**	8.565462	0.261181	0.992839	0.38227	0.539041
Constant	**-251.467754**	-291.374507	-			

Source: Goulden, 1952

Results of the estimation of accuracy of classification with the bootstrap method.

From the table of results given above, it was determined that the actual percentage of error in predicting the quality of eggs was 3.5%.

Table 3. Error percentage in predicting egg quality

Error percentage	
.632+ bootstrap	**0.0348**

Source: Goulden, 1952

The next step is introducing STEPDISK[14] component, whose purpose is to assign the necessary number of variables for classifying affiliation to class A or B.

Table 4. Subset of selected attributes

N	Selected attribute
1	Yolk shadow

Source: Goulden, 1952

Table 5. Detailed results

N	Degree of freedom	The best	Sol.1	Sol.2	Sol.3	Sol.4	Sol.5
1	(1, 56)	**Yolk shadow** **L : 0.2663** **F : 154.26** **p : 0.0000**	**Yolk shadow** L : 0.2663 F : 154.26 p : 0.0000	**Egg white level** L : 0.6730 F : 27.20 p : 0.0000	**Egg white index** L : 0.7206 F : 21.71 p : 0.0000	**Yolk color** L : 0.8472 F : 10.10 p : 0.0024	-

Source: Goulden, 1952

According to the STEPDISK analysis results the only relevant attribute is the yolk shadow. The next step is control of effectiveness of the set model (Demšar et al., 2003). In that sense it is necessary to do the analysis of the supervised linear discrimination function of bootstrap method, whose error is 1.7%, which means it is less in relation to 3.5%, however only one variable occurs in the discrimination function, which is of crucial significance for determining the key factor in classifying within classes A and B

Table 6. Sum view of discrimination linear function

	Classification function		Statistical valuing			
Attributes	A	B	Wilks L.	Partial L.	F(1,56)	p-value
Yolk shadow	**7.565802**	10.951009	1.000000	0.266336	154.26036	0.000000
Constant	**-27.927139**	-57.310071	-			

Source: Goulden, 1952

Where the classification function is $\mathbf{Z= 7.65\ X_1\ -28}$

With a decrease in bootstrap error to 1.2%, as shown in the following table.

14 Stepwise discriminant analysis (STEPDISC) is discrimination analysis which determines relevant variables for the purpose of classifying by using WILKS' LAMBDA method. Wilks' lambda is a statistical test used in multivariation analysis of variance (MANOVA) for the purpose of testing the difference between mediums of identified groups of subjects of combinations of dependent variables.

Table 7. Error rate

Error rate	
.632+ bootstrap	0.1253

Source: Goulden, 1952

2.2.2. Application of the decision tree

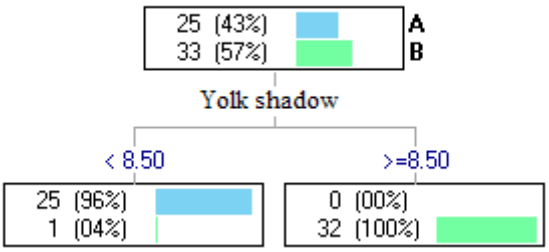
Next to discimination analysis, the research was done by the *Decision Tree*, by using C4.5 algorithm, which is based on the structure of the tree, where every leaf represents an atribute test and every branch a test result (Quinlan, 1996). The goodness of split is based on selection of atributes which are best separated in the sample.

Results with the classification accuracy of 9.6% give the following decision tree:

- **Yolk shadow < 8.5000 then Category (class) = A (96.15 % out of 26 examples)**
- **Yolk Shadow >= 8.5000 then Category (class) = B (100.00 % out of 32 examples)**

Or graphically:

Graph 1. Yolk Shadow



Source: Goulden, 1952

Estimating the accuracy of classification with the *Cross Validation* method we get that the error percentage is 0%.

Further steps in examining the value of classification include the application of bagging method (Sadok et al., 2009).[15] Integrally with this method we use the random tree bagging algorithm within the targets of the supervised learning, which gives 0% error or 100% accuracy (Đinović, 2013).

15 Bagging generates multiple versions classifications which are used as a whole, through the mechanism of voting. Multiple classifications are generated by using the bootstrap method. Every training set is an independent example sample, ie. some examples are excluded, while other are repeated. As well as other ensemble methods, the procedure is suitable for aggregation of work results of "unstable" algorithms, the relation of algorithms in which small changes in the whole set cause big changes in the learned set of rules.

Conclusion

Agro-economy faces great challenges, especially in the domain of research of not only the quality of ground, but also other food resources as well as sources of ecological food. The method of finding hidden knowledge has the assumption in relation to classical methods because they are more precise at classifying, as well as having greater predicting capacities.

The aim of this research was to examine the usefulness and exactness of these methods on the example of examining the presence of egg quality (category A and B) based on examining samples. The *Supervised Linear Discrimination Analysis* was used with the purpose of identifying the specific influence of variables on the quality of eggs with the variation method of accuracy in classifying the influence of variables and identifying the key variables, in this case it is enlightenment –shadow of eggs. Other than this method, the *Decision Tree* was used, which gave results which are more precise in relation of determining the level to which is the influence of certain variables. Given results are at the level of 99% precise, in relation to classical multivariate researches, this is the research where, by using supervised discrimination analysis, the influence of four variables on the presence of egg quality was revised, out of which three variables weren't the key for qualification. All that was needed for the research to come in the foreground was achieved, and that is great degree of accuracy of research (level of 99%).

Usage of this methodological apparatus was of significant help to researchers in the area of agriculture, especially due to the possibility that the research is done on scarce training sets which have a big number of attributes (the entity of the research subject, for example land, quality of agricultural products, fruit, vegetables, eggs, meat and many other) and a very small number of examples (so called scarce sets). The problem of scarceness is related to the evaluation of task difficulty, which in the domain of data mining is solved by reducing the number of attributes-variables. These methodological approaches enable revelation of, until now hidden knowledge in agro-economy and agronomy, and primarily on the causes that determine key-deciding variables and attributes and factors for solving research problems and the correct setting of a hypothesis, in the area of agro-economy, as well as in other areas of research.

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KVALITET REZULTATA ISTRAŽIVANJA U AGROEKONOMIJI PRONALAŽENJEM IMPLICITNIH ZNANJA

Gordana Vukelić[16], Slobodan Stanojević[17], Zorica Anđelić[18]

Sažetak

Pronalaženje implicitnih znanja (Data Mining-DM) u podacima iz oblasti agroekonomije je naučna metoda, koja omogućuje istraživačima da ne polaze od postavljenih scenarija istraživanja gde su unapred odredjene predpostvake i hipoteze na bazi nesignifikantnih atributa. Suprotno tome, pronalaženje implitnih znanja ili utopljenih znanja (DM) omogućuje detektovanje onih atributa, generalnije onih skrivenih znanja koja omogućuju postavljanje prave hipoteze. DM metode to radi iterativnim putem utvrđivanja ključne attribute i faktora injihov uticaj na kvalitet agroresursa. Istraživanje je izvedeno na slučajnom uzorku analize kvaliteta jaja. Predmet istraživanja su mogućnosti klasifikacije i predikcije signifikantnih varijabli-atributa koje odredjuju nivoa kvaliteta jaja. Istraživanja u prilogu polazi od primene Data Mining, kao oblasti mašinskog učenja, koja značajno pomaže istraživačima u optimizaciji istraživanja. Primenjena metodologija u toku istraživanja uključuje analitičko-sintetičke procedure i metode Data Mininga, sa posebnim fokusom na primenu Nadgledane linearne diksriminacione analizu i Stabla Odlučivanja (Decision Tree). Rezultati indiciraju značajne mogućnosti primene DM kao dodatne analitičke procedure u obavljanja agroistraživanja i može se zaključiti da u istraživačkom postupku doprinosi poboljšanju efektivnosti i validnosti procesa obavljanja tih istraživanja.

Ključne reči: *Mašinsko učenje, data mining, predviđanje, klasifikacija, nadgledana diskriminaciona analiza, stablo odlučivanja, efikasnost agroistraživanja.*

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Review article

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THE CHANGES IN ECONOMY AND IN AGRI-FOOD SECTOR IN POLAND - MACROECONOMIC ANALYSIS

Marek Wigier[1]

Summary

Polish membership in the EU structures was a milestone which affected the acceleration of structural transformations in the entire national economy. In the period 2002-2014 the integration processes and the support of the agricultural policy was affected on structural changes in agribusiness sector. The purpose of this study is to assess the degree of development of agribusiness sector and the presentation the achievement related with Poland's membership in the EU. Using the statistical and descriptive methods, has been carried an analysis of the Central Statistical Office macroeconomic data with regard to assessing the degree of the structural changes in the economy and in the agro-food sector, the changes in food trade. Regarding to agriculture were represented among others changes in the agrarian structure, the income dynamics, regarding to food industry - amount of investments, the development of the output value etc.. The article conclusions are referred to macroeconomic and structural changes taking place in economy, in polish agriculture and in food industry.

Keywords: *agribusiness, macroeconomic changes, public support*

JEL Classification: *Q10, Q18, O 13*

Introduction

The characteristic feature of the long-term development of agriculture is its decreasing share in the structure of the national economy and of agribusiness (Lewis, 1954, Jakubczyk 2010). The degree of industrialisation has always been a derivative of the development of agriculture, and, consequently, of the food industry (Wilkin 2003). The economic development consisted in a gradual transition from the agricultural economy to the industrial economy financed from agricultural revenues. This process has proceeded along with an increase in the level of the socio-economic development of the country. The share of agriculture in the gross domestic product decreased, the number of the employed declined and the socio-economic situation of agriculture was increasingly dependent on what happened outside of it, in other sectors of the

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national economy (Woś 1979, Tomczak 2005). The stimulus for the development of the economy was the modern sectors, i.e. industry, services, IT. In the theory of economics, those dependencies have been included in the three sector theory[2].

Currently, the contribution of agriculture to the industrialisation process, sustainable development, provision of public services or political stability is being reassessed. Today, a modern agricultural holding is sort of an enterprise (Rembisz, 2005). It applies advanced manufacturing techniques, is horizontally and vertically integrated with other entities, has the well-developed marketing system, and in its decisions it is guided by market trends and consumer preferences (Kowalski, Rembisz 2005). The modern agricultural holding is characterised by a high degree of complexity, diversity and integration. Thus, the allocation of resources in agriculture becomes increasingly dependent on market forces and forming networks of interbranch connections. The agricultural production is increasingly dependent on the progress in genetic research, the implementation of advanced manufacturing technologies, the development of research regarding the health and nutritional values of food, the application of organic production criteria. Distinguishing between the stage of the production of raw materials and the stage of their initial processing, while still easy, is often more and more fuzzy. The industrialisation of agriculture and its development become inseparable processes.

Implementing the objectives of CAP support has important impacts on food economy. The current objective set of the CAP, according to the "EU 2020" strategy, is that agriculture should contribute to smart, sustainable and inclusive growth (European Commission, 2010). Government policy measures have static effects, risk-related effects and dynamic effects on production (OECD, 2001a), and different transfer efficiency on farm income depending on policy tools applied (OECD, 2001b). The impact of agricultural subsidies on income distributional effects depends on their type, the structure of the markets and the existence of market imperfections (Ciaian, 2011). Most of the studies investigate the direct impacts of subsidies on prices, output, income, the environment, etc. by assuming that subsidies do not alter the structure of agricultural markets and do not interact with market institutions. In reality, government policies may have various unintended effects (they can change the structure of market organization or crowed out some market institutions) (Forgasi et al., 2014).

The agrarian structure in Poland, which currently undergoes transformations, leads to an absolute reduction in the number of farms and polarisation of the area. Agriculture as a sector involved in the creation of the GDP loses its importance to the other sectors

2 The concept of the three-sector economic structure, its changes and correctness of the development of sectors (the theory of three sectors of the economy), is inextricably connected with the names of three authors, who built its foundations. This theory was developed in the 1930s by A.B.G. Fisher, C. Clark and J. Fourastie. It is based on a thesis about the changing role of the individual sectors in the historically considered process of development of economies, namely the decrease in the importance of the agricultural sector; growth, stabilisation and then also decrease in the share of the industrial sector and the continuing increase in the role of the service sector, related to the economic development.

of the economy. Therefore, a characteristic feature of the process is deagrarianisation the national economy and the development of rural areas. Throughout this process, it is extremely important for the ongoing structural changes to result in the improvement of the competitive position of farms and long-term and sustainable rural development. Poland's accession to the EU has generated new economic and organisational conditions to support structural changes in the broadly defined food economy and rural areas (Poczta 2012). Policy instruments implemented within the CAP create chances for the stabilisation of structural policy conditions over the period of several production cycles, thus stimulating the desired changes in the area structure of farms, the improvements in the competitiveness of production, environmental protection and multi-functional development of rural areas. Thus they are a fundamental instrument supporting the process of modernisation of Polish rural areas and agriculture (Wigier, 2014 b).

Macroeconomic situation

Polish integration with the EU structures was a milestone which affected the acceleration of structural transformations in the entire national economy. The dynamics of this process resulted from, inter alia, the adoption in Poland of new solutions and regulations in the field of the economic policy, including the agricultural and trade policy, access of more than 505.7 million[3] consumers, inflow of public financial resources from the structural funds, cohesion policy and the CAP policy or the free movement of persons, goods and services.

Table 1. Selected macroeconomic indexes in 2002-2014

Specification	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
GDP value in PLN billion (fixed prices of 2012)	1,059	1,101	1,158	1,198	1,277	1,369	1,422	1,459	1,515	1,588	1,616	1,643	1,700
GDP per capita (current prices in PLN thousand)	21.1	22.1	24.2	25.8	27.8	30.8	33.5	35.2	37.3	40.3	41.9	43.2	45.0
Dynamics of GDP changes (previous year = 100)	102.0	103.6	105.1	103.5	106.2	107.2	103.9	102.6	103.7	104.8	101.8	101.7	103.4
Share of investments in GDP (in %)	13.5	13.1	13.0	13.3	14.5	16.2	17.0	16.1	15.1	15.7	14.7	13.9	14.4

3 Eurostat data as of 1 January 2013 http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Population_statistics_at_regional_level/pl (date of reading: 14.08.2015).

Specification	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Inflation (CPI) (previous year = 100)	101.9	100.8	103.5	102.1	101.0	102.5	104.2	103.5	102.6	104.3	103.7	100,9	100.0
Unemployment rate (%, BEAL)	19.7	19.3	18.0	16.7	12.2	8.5	6.7	8.5	9.3	9.7	10.1	9.8	8.1

Source: Own elaboration based on the CSO data. Statistical Yearbook of the Republic of Poland, CSO, Warsaw, subsequent years and http://stat.gov.pl/wskazniki-makroekonomiczne/ access date 18.09.2015.

In 2002-2014, a macroeconomic situation in the Polish economy was relatively stable (*Table 1*). In the same period, the GDP grew by 4-7% per year. Indeed, the world economic crisis of 2008 caused a slowdown, but GDP developments were positive throughout the period considered. The nominal GDP per capita grew by over 100% to reach about PLN 45 thousand in 2014. In the first half of 2014 Poland's GDP increased by 3.4% compared to the same period of previous year. At the same time, domestic demand grew by 5.1%. These data show an economic recovery when compared with the tough last year, when GDP grew by 1.7% (year/year) in the entire year and domestic demand dropped by 0.2% (Wigier 2014 b).

The growth rate was stabilised by EU structural funds and domestic demand. Since Poland's accession to the European Union in 2004 the country has come a long way. A strong support in this process has been and continues to be provided by the inflow of structural funds granted in the framework of the EU's cohesion policy. In the EU's 2007-2013 budget, the subsidies for Poland amounted to nearly EUR 68 billion, the highest sum among the EU funding beneficiaries. According to the Regional Development Ministry's data as of July 2015, since the launching of EU subsidies programs of the 2007-2013 framework, authorities and beneficiaries signed 106,311 contracts for the total sum of PLN 410 billion of qualified expenses, including co-funding on the part of the EU amounting to PLN 284.4 billion[4].

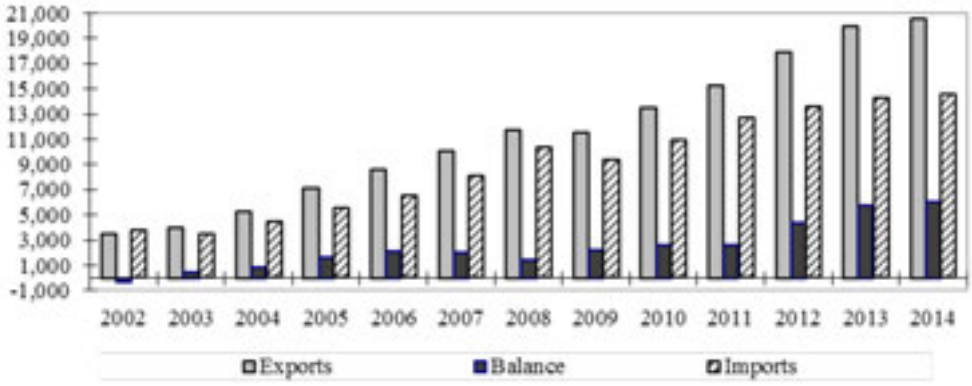
The factors stabilising the development rate were high investments, at the level of about 13-17% of the GDP value, inflow of financial resources from the structural funds, foreign direct investments (FDI) and internal demand. Poland has so far stood out in terms of FDI among the CEE countries. Strong internal demand and solid private consumption used to be named by economists as strengths of the Polish economy, helping the country to retain its economic growth even in the face of difficult conditions on international markets. The unemployment rate gradually decreased, from about 16-19% in the period preceding integration with the EU to about 8% in 2014. The inflation rate oscillated around the inflation target designated by the Government (from 1 to 4%). Poland is now the sixth-largest economy in the EU. Living standards more than

4 https://www.mir.gov.pl/media/7562/NSRO_miesieczna_lipiec_2015.pdf

doubled between 1989 and 2014, reaching 62% of the level of the prosperous countries at the core of Europe.

The dynamic economic growth translated into the reduction of the unemployment rate and general improvement of the income of Polish citizens. This, in turn, was reflected in the growing demand, including demand for food products. However, the share of the latter in household budgets remains substantial (ca. 25% of the general expenses). The foreign trade plays also a prominent role in stimulating GDP growth. Following years of stagnation or sluggish growth Polish foreign trade in agri-food products soared after EU accession. Previously a net importer of food products, Poland has become a net food exporter. In 2014 export surplus amounted to about EUR 6 billion (*Figure 1*). The positive balance is generated by trade in products of the food industry, and the surplus is several times higher than deficit in agricultural trade. The share of the Polish agriculture in creating the added value following the accession to the EU shows a tendency to decrease. Currently it is at the level of 3-4%. At the same time, agriculture employs ca. 15% of the total number of employed people, which is indicative of low labour efficiency.

Figure 1. Polish foreign trade in agri-food products in 2002-2014 (EUR million)



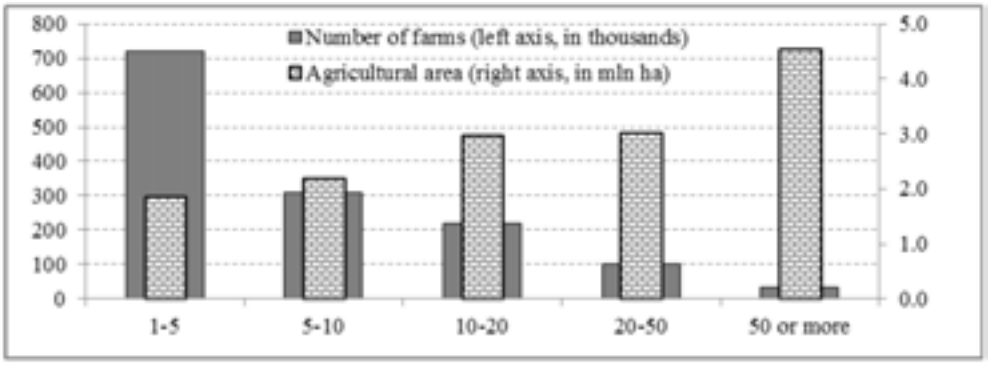
Source: Authors' own calculation according to: Handel zagraniczny produktami rolno-spożywczymi. Stan i perspektywy, No. 20-40, "Analizy Rynkowe" 2005-2014, IERIGŻ-PIB, ARR, MRiRW, Warszawa.

The development prospects of agriculture less and less depend on conditions endogenous to the sector and increasingly depend on sectorial policy and, primarily, macroeconomic policy. Growth trends in the whole economy are of paramount importance to the competitiveness of the food sector. Positive macro-results spread to agriculture and its environment. GDP growth stimulates disposable income, which in turn translates into increased demand for food products.

Transformations in agriculture

Following the accession to the EU have been major changes in the agrarian structure which continued long-term trends. In the period preceding accession to the EU (1996-2002), large agricultural holdings (20-50 ha UAA), which took over arable land from small and medium agricultural holdings, but also from holdings of over 50 ha, developed dynamically. The growth in numbers was accompanied with the decrease of surface. The arable land of holdings below 1 ha grew, but their number dwindled. Following the accession to the EU, the number of holdings decreased by 28%, and their surface – by 3%. The development of large holdings lost dynamics, but still arable land were taken over by holdings of the surface of 20 to 50 ha, for both smaller holdings, of which the number and area decreased, and bigger, the number of which, despite the decrease of the area, grew. The number of holdings taking over land slightly increased. The number of holdings smaller than 1 ha decreased by 27%. To a slightly lesser extent the number of small and medium holdings decreased (from 25% to 16%). Their area also shrunk, including, to a largest extent, in the group of 10 to 20 ha (by 8%). These changes indicate that the Polish agriculture, despite major changes, is still to a large extent dispersed. *Figure 2* shows the use of land in different groups of farms in 2014..

Figure 2. Land use by groups of farms in 2014



Source: Agriculture in 2014. CSO data, Warsaw 2015.

In 2002 26% of agricultural holdings did not run agricultural activity, and in 2014 this share decreased to 16%, which confirms the thesis of the growth of productive and pro-market orientation of holdings. After transformation into market oriented economy in Polish agriculture there appeared a slow increase in the fixed assets share in the structure of means of production, on the one hand, and, on the other, depreciation of fixed assets was observed (not sufficient replacing rate to keep the value of fixed assets on constant level). Average image of the Polish agriculture is very unfavourable in this regard. In 2014, the use of fixed agricultural assets exceeded 76%. This situation concerns mostly buildings and facilities. The usage of machinery is considerably lower. While, following the accession to the EU, the investments largely increased, and their share in the value of fixed assets almost doubled, it does not change the general situation of the Polish agriculture. Firstly, investments are made by large holdings, economically

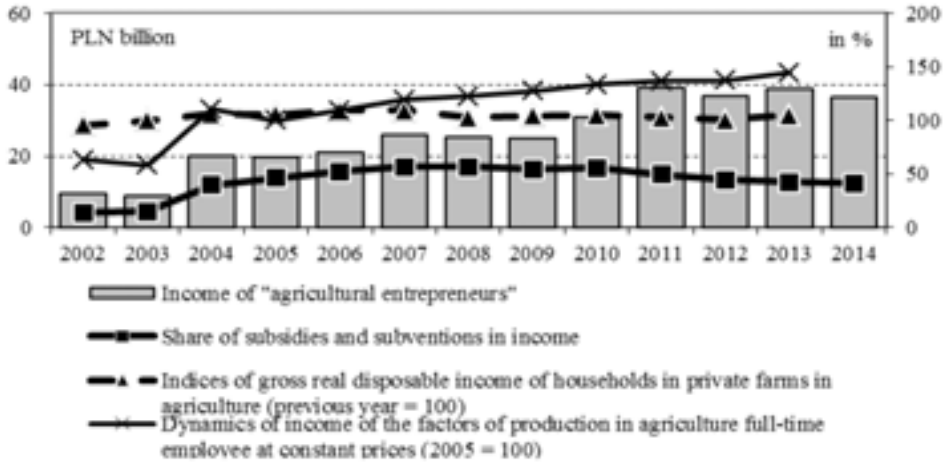
strong secondly, investments concern in majority the machinery and not buildings and facilities used in agricultural production. The estimated number of farms amounts to 150-250 thousand (Fogarasi J., Wieliczko B., Wigier M. Tóth K., 2014). Agricultural activity conducted in the remaining farms does not enable recovery of fixed assets which increases its usage (Rembisz, Floriańczyk, 2015).

According to CSO data, the number of employees in agriculture has been relatively stable recently and it was at the level of slightly over 2 million. Nevertheless, the so-called "hidden unemployment" is included in these numbers, as significantly large part of family holdings members spend little time working in agriculture. Undoubtedly, the employment in agriculture decreases. Currently ca. 22-24% of the working age rural residents work in agriculture. It should be pointed out, that 40-45% of the total number of the unemployed live in rural areas. Following the accession to the EU, this proportion slightly increased, but it resulted from the reduction of unemployment in other sectors of the national economy (Nurzyńska, Poczta, 2014).

The value of agricultural production was on the increase in 2002-2014. Nominally, the value of global[5] and commercial output has more than doubled (PLN 112 billion and PLN 84 billion respectively). In real terms (in 2002 prices) the value of global production in 2014 increased by 27%. On average over the year, the output value increased at a 1% rate, and for goods it increased at a 2% rate. A faster growth in the value of commercial production than the output results from greater commercialisation of production and increased marketability of agriculture. The share of commercial production in the output in the period in question increased by 10 pp. to 72%. Fluctuations in production cause changes in prices of plant products and, consequently, result in business fluctuations in livestock sector, and change in the production level. Following the accession to the EU no major changes were observed in the share of plant and animal products (Rolnictwo, 2015).

5 The output is the sum of plant and animal products obtained during a year in a given farm. Its primary source is crop production, animal production and income from mechanisation services, but also processing. The output reflects the actual size of the agricultural production. It is therefore a measure that makes it possible to determine the production orientation of an enterprise (Woś 1999].

Figure 3. Income in the Polish agriculture and their dynamics in 2002-2014



Source: Authors' own calculation according to CSO data.

The income of the agricultural sector significantly increased after the accession to the EU. A sudden increase of income was noted in 2004, namely in the first year after Poland's accession to the EU and covering the national agriculture with the CAP income support system. In following years the dynamics of income growth was slowed down, yet a clear growing tendency was observed (Wigier 2014 a). In nominal prices their value in 2014 amounted to almost PLN 37 billion, as compared to less than PLN 10 billion in the pre-accession period (*Figure 3*). The growing income of the sector, combined with employment reduction, resulted in significant growth of income calculated per persons employed full time. In 2014 their amount was almost twice higher than in 2005 and almost twice as high compared with the pre-accession period. The share of subsidies and grants in income as a result of the implementation of direct payments and other measures investment aid schemes increased from 15 to more than 45 percent.

The EU funds had a significant share in the financing of transformations in agriculture until Poland's accession to the EU. The direct payments are the most common type of support, each year about 1.4 million of farmers use this form of support. The value of payments in the 2004-2014 period increased from ca. PLN 6 billion to PLN 14 billion per year. When calculated per one farm it reaches an average of ca. PLN 9 thousand, and this form of support is used by 87% of farms having an area of more than 1 ha. An equally important source of income (regardless of production, and only based on the farm's location) are payments for less-favoured areas (LFA). Each year these payments are granted to ca. 700 thousand farmers, i.e. half of those receiving direct payments. The land surface covered with LFA payments amounts to ca. 6.9 million ha. The manner of spending of the resources is not subject to settlement. Smaller farms usually allocate the granted payments to current needs and means of production (fuel, fertilisers), while the bigger ones also make investments.

The resources earmarked for investments are also an important source of aid for farms. In order to obtain them a farm has to prepare a business plan and gain its acceptance from a body managing the programme. So far, the financial resources for investments in farms available under SAPARD, SOP "Agriculture", RDP 2004-2006 and RDP 2007-2013 were used in their entirety. By 2002 a total of 15% of farms benefited from measures aimed at improvement of competitiveness of farms. The greatest share, i.e. 6% benefited from measure "Modernisation of agricultural holdings", 5% from "Early retirement", 2.7% from "Setting up of young farmers" and 1.3% from "Diversification of agricultural activities". The value of grants is rather considerable, and in the current RDP 2007-2013 their average value as calculated per one beneficiary is even higher. In measure "Modernisation of agricultural holdings" it exceeded PLN 140 thousand, in measure "Diversification of agricultural activities" – PLN 84 thousand, and in "Setting up of young farmers" – PLN 66 thousand (Sprawozdanie, 2014).

In the 2004-2014 period, the cumulative value of support for the agri-food sectors from three main sources of support, i.e. a grant from the national budget to KRUS, a grant from the national budget co-financing of the CAP, and payments from the EU budget, exceeded PLN 370 billion. The largest share of these payments were subsidies to insurance (38%) and grants coming directly from the EU budget (over PLN 160 billion, i.e. 35% of the above amount). Aid for the implementation of the CAP was approx. 27% of the total amount. RDP 2007-2013 with a budget of nearly PLN 72 billion is the largest of the CAP investments programs (Matuszczak 2013, pp. 33-43). Its participation in the CAP expenditure exceeded 33%. Given the budget for RDP 2007-2013, sharing between the principles of agricultural models, we can assume that the program in approx. 41% supports the development of industrial agriculture, 34% – socially sustainable agriculture and 25% – environmentally sustainable agriculture (Wigier 2013 b, pp. 22-42). It should also be emphasized that the remaining programs, the implementation of which was completed in 2004-2006, despite the modest budget, gave a strong impetus to investment and "demonstration" on farms and in rural areas, and public aid has become a stimulus for investment activities.

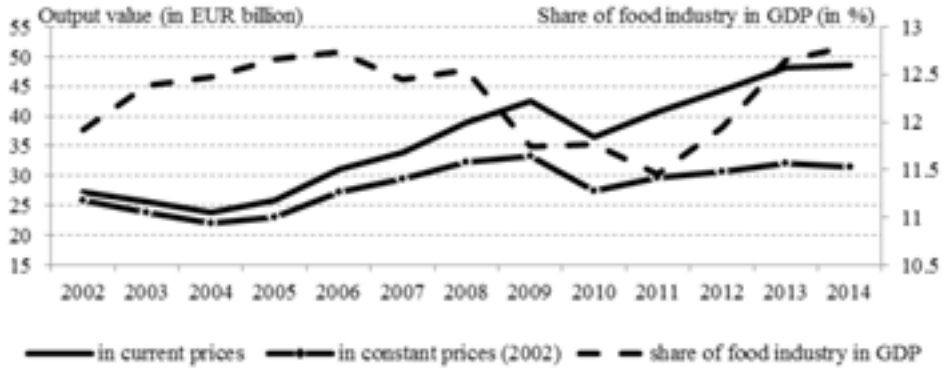
An improvement of competitiveness in agriculture depends on structural changes (that predetermine the efficiency of production factors used) and on development of the entire national economy, especially in the context of capacities to create new jobs outside agriculture. The rural development programmes, direct payments and changes in the entire economy accelerated structural transformations in agriculture, which consisted e.g. in concentration of production (Floriańczyk, 2006).

Changes in the food industry

Changing the economic system after the year 1990 triggered the process of structural transformation in the food industry. These changes were caused by the privatization process, restructuring and inflow of capital. In turn the development and improvement of competitiveness occurred mainly in the first decade of the twenty-first century, and particularly rapidly in the first years of the Polish membership in the EU. Over the

last ten years there has been increase of: investment and modernization of production, labour productivity, value of production and value of exports. These phenomena constitute a firm basis for further strengthening the competitive position of Polish food industry on the national and EU markets.

Figure 4. Development of the output value



Source: Authors' own calculations based on CSO data.

In the period 2002-2014 the value of Polish food industry production sold has nearly doubled (*Figure 4*). There was particularly dynamic growth between 2003 and 2007, which was initially related to the prospect of Poland's entry into the EU and the increase in food prices, and later was primarily the result of increased agri-food product exports and growing domestic demand. The economic downturn that in most EU countries turned into a short-lived recession contributed to a halt to the rapidly growing Polish food industry production sold. In nominal terms, over the whole period, growth in the value of production amounted to 6.8% per annum and in real terms approx. 3.8% per year.

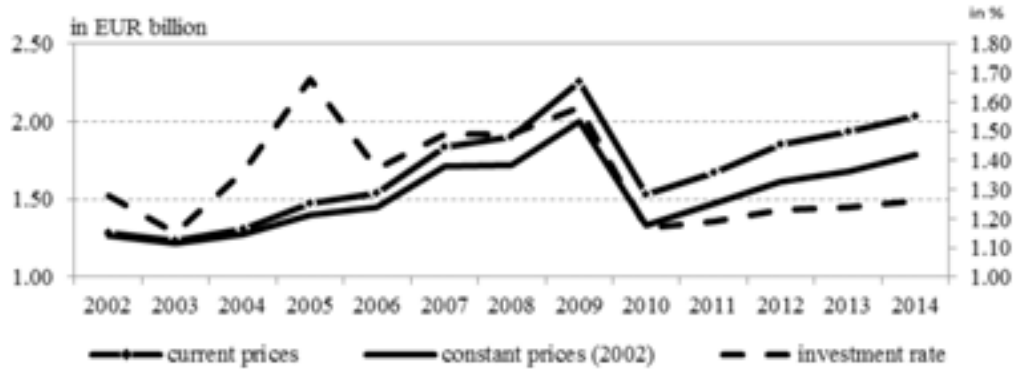
Food processing is characterised by high fragmentation and a low level of concentration. This is due to a lower level of technical development of this sector and the nature of the object of labour, determined by the variability of processed agricultural products. Other significant characteristics of the food industry include its high relation to local and regional markets, assortment diversity and relatively short production series and short shelf life of products. Significant impact on the process of concentration of production in the food industry had the transnational corporations. Their impact was both positive and negative. The corporations positively influenced: the process of transformation, the accelerations of restructuring of many industries, technological progress (introduced not only in their factories, but also through their imitation by other companies), increase in wages, improvement in the quality of market offer, accelerated processes of specialization of production. The corporations influenced negatively: the monopolistic practices, transfer of profits abroad. Corporations activity contributed also in the demise of many domestic companies and contributed to a rise in unemployment. Transnational corporations' share in the value of sales of sectors of

the Polish food industry is estimated at about 40%. This participation was increasing slowly but steadily. Therefore, the activity of TNCs is a competition for domestic producers (Wigier, 2014 c).

Food producers have the most of competitive advantages, most of which relate to price and quality; they have significantly increased production and exports, and consequently improved their economic and financial situation. The improvement of the condition of the food industry was also significantly affected by the public support given to the sector in connection with the Polish accession to the European Union (both in the pre-accession period and in the period of Polish membership). An improvement in the financial performance of the food industry was evident directly after the accession of Poland to the EU. The increase in profits was accompanied by increased liquidity. The good economic and financial situation shows that the industry has proved to be quite resilient during the global economic crisis (Mroczek, 2014).

The processes of globalisation and integration have influenced the change of trends in the entity structure development of the food industry. Concentration of production processes returned to the sector, which replaced the tendency for fragmentation of processing occurring throughout the transition period. The perspective of Poland's entry to the European Union resulted in increased capital expenditure. Investments have led to improved production efficiency, reductions in employment and labour productivity growth (Szczepaniak, 2014). Despite visible progress in productivity growth in Poland, it was still on average more than 40% lower than in the EU-15. During the economic downturn, processing companies made more sensible investments (*Figure 5*).

Figure 5. Annual amount of investments (in EUR billion) and investment rate (in %) in the food-industry



Source: Authors' own calculations based on CSO data.

An important role in the transition process of the food industry has been played by support of investment with public funds from the EU budget and national resources. In 2002-2014 investments in food industry focused mainly on: improvement of the sanitary and hygienic as well as veterinary conditions of production (23% of the total value),

improvement of production quality (25%) and introduction of new or modernisation of the existing technologies (20%). Almost two thirds of all projects delivers one of the three objectives. The shares of investment pertaining to the improvement of animal welfare was 1%, creation of new and rationalisation of the existing marketing outlets was 2% and reducing the negative impact on the environment was 4%. The total investment in the sector, in 2002-2014, was equal to EUR 24 billion. Approximately 5% of the investments was financed by EU subsidies (Wigier, 2014 d). Although the public resources are a change stimulator, in the whole food industry investments, they represent only an additional source of financing. Development of the most important agri-food industries, supported by external resources, has been and is a necessary condition of sustainable development of food economy.

Conclusions

The structural changes taking place in the Polish agriculture, food industry and rural areas in the last decade became more dynamic. Within the last decade there has taken place the dynamisation of structural changes occurring in Polish agriculture. As the most important should be recognised: a decrease in the number of farms with a simultaneous increase in the share taken by the largest farms; the decrease in employment in agriculture and the progressing concentration and specialisation of production. The size of the investment has increased noticeably, but their value still does not exceed the value of depreciation of fixed assets. Despite these changes, the Polish agriculture is still characterised by a strong polarization of the agrarian structure.

In the period 2002-2014 the value of Polish food industry production has nearly doubled and its share in GDP fluctuated of approximately 11.5 to 13%. The good economic and financial situation shows that the industry has proved to be quite resilient during the global economic crisis. Over this period there has been increased: the investment and progressed modernization of production, labour productivity, value of production and value of exports. An important role in the transition process of the food industry has been played the support of investment with public funds from the EU budget. Macroeconomic changes in the economy, the restructuring and the modernisation proces in entire agricultural sector constitute a firm basis for further strengthening the competitive position of Polish food industry on the national and EU markets.

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Introduction

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Table 5. The distribution cost of packaged goods from Subotica to retail-store objects

Indicators	Period			Total
	Month 1	Month 2	Month 3	
Distance crossed (km)	12.926	11.295	13.208	37.429
Fuel consumption (litre)	3.231	2.823	3.302	9.356
Value of fuel consumption (RSD)	242.378	211.790	247.653	701.821
Total time spend on touring (hour)	314	266	417	997
Value of total time spend on touring (RSD)	47.048	39.890	62.570	149.508
Number of tours	98	77	102	277
Toll value (RSD)	0	0	0	0
Number of pallets transported (piece)	1.179	976	1358	3.513
Total weight transported (kg)	602.600	429.225	711.116	1.742.941
Vehicle maintenance costs (RSD)	203.858	164.970	224.806	593.634
Lease costs (RSD)	480.938	454.214	565.784	1.500.936
Total sum (RSD)	974.222	870.864	1.100.813	2.945.899

Source: Petrović, 2012;
Note: Values within the table are calculated without Value Added Tax (VAT)

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Anđela Marković[2], Petar Petrović[3], Mirko Mirković[4]

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Key words: *navesti, maksimalno, pet, ključnih, reči.*

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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.***

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Introduction

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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).

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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.

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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.

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