INTERACTION BETWEEN UNEMPLOYMENT AND THE CULTIVATION OF ARABLE LAND – REGIONAL APPROACH

Z. VASKO, A. OSTOJIC, S. MIRJANIC and L. J. DRINIC
University of Banja Luka, Faculty of Agriculture, 78 000 Banja Luka, Bosnia and Herzegovina

Abstract

VASKO, Z., A. OSTOJIC, S. MIRJANIC and L. J. DRINIC, 2013. Interaction between unemployment and the cultivation of arable land – regional approach. *Bulg. J. Agric. Sci.,* 19: 995-1002

It is historical trend that the labor force from rural areas migrate to urban areas. Employment in agriculture is decreasing because of the intensification of agricultural production, and because of the lack of economic interest to deal with this production. In less developed countries, this trend is so obvious that a significant portion of agricultural land remains uncultivated. In situations of high unemployment and its increase, there is the argument that agriculture is an opportunity for a temporary self-employment labour force that lost jobs in the industry and other non-agricultural activities. Therefore, the working hypothesis tested whether the increase in unemployment reduces overall uncultivated agricultural land, as one of the logical consequences of engagement one part of unemployed labour force in agriculture. This phenomenon has been studied on the example of six regions in the Republic of Srpska, one of the two entities of BaH, in the period of 2002-10. The research confirmed that only in Bijeljina region, there was a high correlation between unemployment and uncultivated land. According to the evaluated regression model in regions of Trebinje, Banja Luka and Prijedor, increase in unemployment in the current year have resulted in the reduction of uncultivated land in the next year, but the evaluated models were not statistically significant. The general conclusion was that there was not significant interdependence between increasing unemployment and decreasing uncultivated land.

Key words: agriculture, unemployment, arable land, cultivation

Abbreviations: BaH - Bosnia and Herzegovina, EU - European Union, RS – the Republic of Srpska, SFRY - Socialistic Federal Republic of Yugoslavia

Introduction

The labour force from agriculture and rural areas migrate to urban areas and to non-agricultural activities. The motive behind is better wages and more secured (permanent) jobs, and in some countries in transition, even guaranteed health and retirement insurance. This type of migration was particularly characteristic of the period of industrialization during the socialist period, but the motives stayed the same in similar post-socialist period. In addition, modernization of agricultural production reduces the need for labour and surplus of labour force created in that way are being employed outside of agriculture. During the period of economic crisis and other disturbances on the labour market, one part of labour force, which cannot be employed or keep employment in other sectors, finds their jobs in agriculture. This is especially relaying to those unemployed who have certain "roots" in rural areas,

i.e. resources to be engaged in agricultural production and thus for commencing activities, they do not have to invest significant resources.

The transfer of labour from rural to urban areas and from agriculture to industry and other sectors is one of the main characteristics of any agricultural overpopulated country. Thus, in the most developed EU member states (EU-15) average rate of agricultural employment fell to 3.5% in 2007 (Cialan et al., 2010). Lahiri (2011) researches the conflict between agriculture and industry about the use of limited land that is needed by both sectors and its impact on unemployment in agriculture. Moreover, reduced land-availability in the agricultural sector leads to higher unemployment in this sector as well. Although this phenomenon is present in BaH also, the conflict has not escalated, because agricultural land is not used to its maximum extent, so the change of agricultural

to non-agricultural land can still be tolerated due to uncultivated land. However, the separation of labour force from the land increases its mobility in terms of seeking employment in non-agricultural sectors (after the World War II, in period of just 30 years, the percentage of agricultural population in the former Yugoslavia decreased from 67% to 20% (Miljkovic and Nikolic, 1996)). In the Balkans, it remained the practice even from the period of socialism, for people to live in the village, but to work in the (nearest) town, so such, so called mixed farms dominated the whole structure of rural households. Grgic and associates (2011) in their study confirmed that closeness to Zagreb, with no change of place of residence, makes a relatively more favourable picture in terms of (un)employment in the County of Zagreb (Croatia). Self-employment occurs mainly on two basis, because of development of economy and self-employment, which is a combination of own capital investments, knowledge and innovation, or a necessary (and very often the only) way out of unemployment. Leiubs et al. (2010) state that there are limited options for getting a job, lack of social insurance and lack of other alternatives are very often reasons for self-employment, however, Leibus also notes that (at least in case of Lithuania) the level of self-employment in agriculture is higher if the general level of unemployment is lower, and he also states that are number of self-employed in agriculture in the EU reduces. It is similar in BaH, where many people work in the so-called informal economy in which they are self-employed. Agriculture is an important source of employment in the informal economy, and workers in this sector are least likely to move from informality to formality. Therefore, workers in rural areas face a higher probability of remaining in informal employment for much longer than workers in urban areas (Kare et al., 2011).

Unemployment in BaH stands at 24.5 per cent which is nearly three times the rate of the EU-27 average of 9.5 per cent for the same period (Kare et al., 2011), and it is even increasing n recent years, so that any possibility, at least short-term employment are present. In addition to BaH, there are similar problems present in other countries. Thus, for example. Dachin (2011) in the case of Romania, after the last outbreak of the global economic crisis, says that the agricultural sector again plays the role of employment buffer, as it happened in the '90s. In Serbia, during periods of transition, surplus of workers also was dislocated from industry to agriculture, which causes hidden unemployment (Bogdanov et al., 2010). A number of theses saying that by increasing productivity in agriculture necessarily imply a decrease in the number of people employed in agriculture. There is a theory that lack of arable land results in agrarian overpopulation and creates over employment in agriculture. Food as the output of agricul-

tural production is the result of engagement of (at least) two factors, agricultural land and labour (Krugman and Obsfeld, 2003). Land is limited and it actually dictates the required number of workers. With increasing labour productivity, the need for this factor is reducing, and vice versa. However, in a situation where various sectors compete for the same workforce, higher compensation (salary) for work in other sectors can "drag" the labour force from agriculture, which could result in a reduction of cultivated land unless the outflow of labour does is not followed by simultaneous increasing of productivity in agriculture. On the other side, the surplus of the workforce in other sectors brings them back into agriculture. If there are unused resources (especially land) "waiting for them", they can be re-employed in that sector.

This paper focuses on the observation of employment trends (temporary or permanent) in the agriculture, for unemployed population unable to find employment in industry and other non-agricultural sectors. Argument for this thesis can be found in the behaviour of a number of unemployed as a rational response to the latest economic and financial crisis. Trends in the labour market in recent years are characterized by two-highlighted phenomenon: reducing the number of people who get their first job, and the increased number of those who have recently lost their jobs (Ionela, 2011). For example, the Greek Payment Authority of Common Agricultural Policy Schemes Aid has received 4 000 applications for leases for state land for farming. As the situation becomes increasingly difficult in the cities, many are returning to the countryside. Figures cited by Athens News show more than 1.5 million people in the cites have expressed an interest in farming in the countryside (Digital Journal, 2012). In addition, in the Balkans and in BaH, many employees who have moved into towns and found employment there, they still have links to the family farms where they help parents or they will inherit the land after the death of their parents. It is therefore logical that they see land and agriculture as the source of their survival and income generation (self-employment).

Material and Methods

Most people employed in agriculture in BaH is not statistically recorded and they are treated as unpaid workforce, self-employed on own farm. Starting from the assumption that one number of unemployed is forced to return to villages and begins to deal with agriculture, that effect of BaH cannot be identified by statistical and other data on employment in agriculture. Therefore, there has been a hypothesis established saying that the increase in unemployment reduces uncultivated agricultural land as one of the logical consequences of engagement of a part of unemployed labour force in
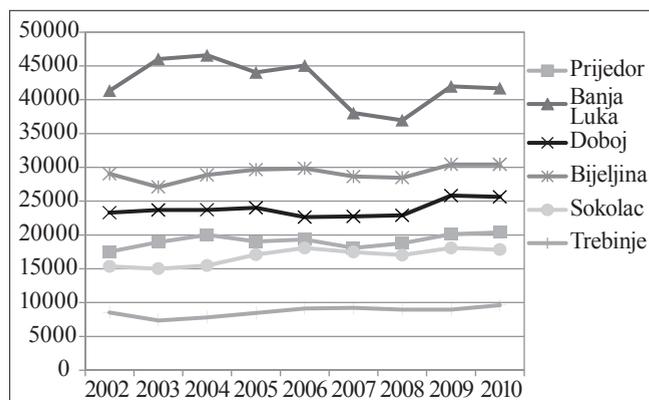
Fig. 1. Number of unemployed per regions (2002-10)

Fig. 2. Uncultivated land per regions (2002-10)

agriculture. Otherwise, in the Republic of Srpska, there are 36-42% uncultivated arable land in the last five years (Mirjanic et al., 2012).

The objective of the research is to determine whether the increase in unemployment (X) increases the surfaces of cultivated land (Y). The research area is the Republic of Srpska, one of the two entities in Bosnia and Herzegovina, which occupies 49% of its territory. Annual data on unemployment and uncultivated surfaces were collected and published at the municipal level, and for the purpose of simplification of the processing, they are regionally grouped (similar approach as Garnett and Lewis (2007) in the case of analysis of regional changes in employment in Australia or Mijacic and Paunovic (2011) in analysis of regional differences in Serbia).

The Republic of Srpska has 63 municipalities, which are the lowest administrative level. The municipality has an area of about ten to several hundred km^2 and have population from a thousand to 250 thousand people (which is why it is impossible to identify them with some of the NUTS levels). Although the Republic of Srpska has no official regionalization, the Spatial Plan of RS for up to 2015, identified 6 mesoregions named by the cities representing their centres: Banja Luka, Bijeljina, Doboj, Istocno Sarajevo, Trebinje and Prijedor. All these regions have developed agriculture to some extent, based on the available agricultural land, which employs some of the work force. Representation of agricultural land in the total land by mesoregions is as follows: Banja Luka - 49.85%, Bijeljina - 50.77%, Doboj - 55.69%, Istocno Sarajevo - 29.43%, Prijedor - 58.92% and Trebinje - 27.05% (Spatial Plan of RS, 2008). The research results have been processed according to the regional approach, i.e. separately for each of the 6 listed mesoregions.

The method of simple linear correlation and regression was used to research influence of the unemployed workforce and sizes of (decrease) uncultivated areas in the Republic of Srpska. The model of a simple linear correlation (Lovric et al., 2006) is as follows:
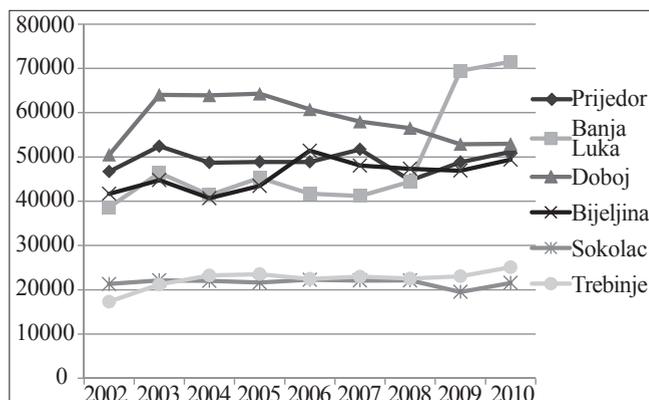
$$Y_i = \beta_0 + \beta_1 x_i + \varepsilon_i \qquad\qquad i = 1, 2, \dots N$$

Y_i is the i-th dependent variable; x_i is the i-th values of the independent variable, $\aa_0$, $\aa_1$ are unknown constants, and $\aa_i$ - stochastic member or random error.

Determining the degree and direction of the observed phenomenon is established by using simple linear correlation coefficient (r) by the following formula:

$$x = \frac{n \sum xy - \sum x \sum y}{\sqrt{n \sum x^2 - (\sum x)^2} \sqrt{n \sum y^2 - (\sum y)^2}}$$

By applying the methods of correlation and regression the impact of unemployment of current year on the change in uncultivated surfaces in the coming year, was observed. Principle t+1 year is chosen because it takes one year to see the effects of increased cultivation of the land by someone who lost the job last year. The data used for analysis (unemployment and uncultivated agricultural land) are for the period 2002-10. The paper used data of the Statistical Bereu of the Republic of Srpska on movement of the unemployed, as well as the sizes of uncultivated land (Statistical Yearbook of the RS 2010 and 2011). To view some of the basic characteristics of these factors, the basic elements of descriptive statistics were calculated. The SPPS statistical package was used for data processing.

Results and Discussion

Data have been collected and summarised for each region on the number of unemployed and uncultivated areas of the municipalities that belong to that region. This aggregated data are systematized for the period 2002-10 and the degree of correlation and regression model have been calculated.

Prijedor Region

In the Prijedor region, ouncultivated land in the average ranged from about 49 395.50 hectares with an average deviation of uncultivated surface compared to an average of 2421.48. The highest number of uncultivated surfaces in this region was back in 2003 and amounted to 52 419 ha, while the minimum area that was not used for agricultural purposes was recorded in 2008 and it was 44 696 ha. In the reporting period, the number of unemployed was growing faster than the number of uncultivated land. When the descriptive statistic is analyzed related to unemployment in this region, it shows that the average unemployment rate was at 27 731.25 of working capable population of the region, and lowest unemployment was recorded in 2002, when it was 17 521. The movement of unemployment and uncultivated agricultural land, as well as their direction and the intensity is shown in Table 1.

Pearson's correlation coefficient in the Prijedor area shows a low degree of dependence between the observed phenom-

ena (r = -0111). Since significance is greater than 0.05 it can be seen that the obtained linear correlation coefficient is not significant, i.e. that there was no statistically significant correlation between the observed variables.

Banja Luka Region

Mesoregion of Banja Luka is the largest region by population in the Republic of Srpska, although the share of agricultural land puts it only in the fourth place. The average of uncultivated agricultural land in the area of Banja Luka is 50 175.50 ha. In this area, there is more intensive increase in uncultivated areas than the number of unemployed. Compared with all other analyzed regions, the highest increase of uncultivated agricultural areas of all six regions is notable. Unemployment averaged at 42 372.56, with the highest unemployment rate of 46 568 inhabitants in 2004, and minimum of 36 959 in 2008. Reciprocity of movement of unemployment and uncultivated agricultural land is given in Table 2.

Table 1
The ratio of unemployment and uncultivated land in the Prijedor region

Coefficients [a]	Non standardized coefficients	Standardized coefficients	t	Sig.	Non standardized coefficients
	B	Std. Error	Beta		B
(Constant) − b_0	49 696.138	1 433.921		34.658	.000
Prijedor – unemployed – b_1	- .011	.040	- .111	- .273	.794

[a] Dependent Variable: Prijedor - uncultivated land.

Correlations	Prijedor – uncultivated land	Prijedor - unemployed	
Pearson Correlation - r	Prijedor - uncultivated land	1.000	-.111
	Prijedor - unemployed	-.111	1.000
Sig. (1-tailed)	Prijedor - uncultivated land	.	.397
	Prijedor - unemployed	.397	.

Table 2
The ratio of unemployment and uncultivated land in the Banja Luka region

Coefficients [a]	Non standardized coefficients	Standardized coefficients	t	Sig.	Non standardized coefficients
	B	Std. Error	Beta		B
(Constant) − b_0	132 771.503	51 312.002		2.588	.041
Banja Luka – unemployed – b_1	-1.944	1.204	-.550	-1.615	.158

[a] Dependent Variable: Banja Luka – uncultivated land.

Correlations	Banja Luka - uncultivated land	Banja Luka - unemployed	
Pearson Correlation - r	Banja Luka - uncultivated land	1.000	-.550
	Banja Luka - unemployed	-.550	1.000
Sig. (1-tailed)	Banja Luka - uncultivated land	.	.079
	Banja Luka - unemployed	.079	.

The data in Table 2 show a strong dependence of the observed phenomena (r = -0.55), but these two phenomena have opposite direction. In the region of Banja Luka, current unemployment leads to a reduction in uncultivated agricultural areas in the coming year (b_1 = -1.94). However, the correlation coefficient is not significant (sig. 0158). This shows that in this region, the independent variable is not priority higher, i.e. the important influence has some other factors was not taken into account in this analysis.

Doboj Region

The area of mesoregion of Doboj is the second area as far as density is concerned in the Republic of Srpska with 74.2 inhabitants per km^2. The average value of uncultivated land in this area is 59 530.75 ha. The maximum size of uncultivated land in mesoregion of Doboj was recorded in 2004 for 64 258 ha, and the lowest uncultivated surface was in 2009 (52 961 ha). Observing the movement of unemployment in this region, it can be said that the average was 23 226.13 persons for the observed period. In the Doboj region, unemployment increased much faster than uncultivated agricultural land. The highest unemployment was recorded in 2009, when it was 25 831 of unemployed. Impact of unemployment on the movement of uncultivated agricultural land is given in Table 3.

Pearson's correlation coefficient in this region was low (r = 0.119) and not statistically significant. Unemployment in the Doboj area this year influenced the slight increase in uncultivated land in the next year (b_1 = 0.304). However, neither this model have any statistical significance, which means that unemployment does not have the primary impact of to uncultivated agricultural land, those are some other factors.

Bijeljina Region

Bijeljina, as mesoregion, in the Republic of Srpska has the highest population density per km^2 78.78. Bijeljina region is also an intensive agricultural area in the Republic of Srpska (BaH). The average size of uncultivated surfaces is 46 551.25 ha. Most uncultivated land in this area was in 2005 with the actual maximum of 51 414 ha, but the lowest size of uncultivated land was in 2003 (41 018 ha). Apart from Banja Luka, this mesoregion shows the lowest increase in unemployment in the Republic of Srpska. In the observed period, unemployment of working capable people on average was 29 121. The lowest unemployment was registered in 2003 at the level of 27 086 unemployed. Quantification of the impact of unemployment for the current year to the engagement of uncultivated agricultural land is given in Table 4.

The coefficient of simple linear correlation between these two phenomena in the observed period was 0.752, indicating a strong dependence on the movement of these two phenomena, and it is statistically significant, i.e. there is a statistically significant linkage between unemployment and uncultivated surfaces. For the area of Bijeljina, impact of unemployment in the current year to the movement of uncultivated land in next year is evident, and there was a statistically significant relation between unemployment and uncultivated surfaces, p-value is less than 0.05 (sig. 0.031). The unemployment rate for the current year did not result in reduction of uncultivated land in the next year (b = 2.037).

Istocno Sarajevo Region

Population density in this region is 25.78 per km^2. The average size of uncultivated surface is 22 433.38 ha. The greatest size of land in this area was not cultivated in 2005 (25 257 ha). Average unemployment in this

Table 3
The ratio of unemployment and uncultivated land in the Doboj region

Coefficients [a]	Non standardized coefficients	Standardized coefficients	t	Sig.	Non standardized coefficients
	B	Std. Error	Beta		B
(Constant) – b_0	52 464.064	24 058.348		2.181	.072
Doboj – unemployed – b_1	.304	1.033	.119	.294	.778

[a] Dependent Variable: Doboj - uncultivated land.

Correlations	Doboj - uncultivated land	Doboj - unemployed	
Pearson Correlation - r	Doboj - uncultivated land	1.000	-.550
	Doboj - unemployed	-.550	1.000
Sig. (1-tailed)	Doboj - uncultivated land	1,000	,119
	Doboj - unemployed	,119	1,000

area was 16 704.50. The highest unemployment rate was 18.088 inhabitants. In 2003, the lowest unemployment was recorded and it was 15 010 persons. Table 5 shows the values of evaluated models and Pearson correlation coefficient.

Pearson's coefficient shows the mean intensity of dependence (r = 0.352) of these two phenomena in Istocno Sarajevo. The influence of unemployment for the current year to uncultivated land in the coming year is not statistically significant (sig. 0.392), which means that there is no statistically significant correlation between these two phenomena in the region of Istocno Sarajevo.

Trebinje Region

According to data of the Spatial Plan of the Republic of Srpska, Trebinje has the lowest population density (20.15 per km^2) of all six mesoregions, as well as the smallest share of agricultural land available (27.05%). The most in-

tensive increase in uncultivated land in the observed period in addition to Banja Luka, was recorded in the region of Trebinje. The average size of uncultivated land was 22 993.50 ha. The maximum area that was not cultivated was 25 078 ha in 2009. Average unemployment in the Trebinje mesoregion was 8555.75 with a minimum number of unemployed of 7348 persons was recorded in 2003. Table 6 gives the values of evaluated model of Trebinje region and the Pearson's coefficient.

The coefficient of simple linear correlation (r = -0.023) is not statistically significant. Unemployment in the current year, according to the evaluated model, leads to a reduction in uncultivated surfaces in the coming year. However, this model does not have statistical significance, which indicates that the impact of unemployment on the activation of uncultivated agricultural land in the region of Trebinje is not the primary factor for more intensive use of uncultivated farmland.

Table 4
The ratio of unemployment and uncultivated land in the Bijeljina region

Coefficients [a]	Non standardized coefficients	Standardized coefficients	t	Sig.	Non standardized coefficients
	B	Std. Error	Beta		B
(Constant) − b_0	-12 764.729	21 218.610		-.602	.569
Bijeljina – unemployed – b_1	2.037	.728	.752	2.798	.031

[a] Dependent Variable: Bijeljina - uncultivated land.

Correlations	Bijeljina- uncultivated land	Bijeljina - unemployed	
Pearson Correlation - r	Bijeljina - uncultivated land	1.000	.752
	Bijeljina - unemployed	.752	1.000
Sig. (1-tailed)	Bijeljina - uncultivated land	.	.016
	Bijeljina - unemployed	.016	.

Table 5
The ratio of unemployment and uncultivated land in the Istocno Sarajevo region

Coefficients [a]	Non standardized coefficients	Standardized coefficients	t	Sig.	Non standardized coefficients
	B	Std. Error	Beta		B
(Constant) − b_0	13 412.252	9 807.618		1.368	.220
I. Sarajevo – unemployed – b_1	.540	.586	.352	.922	.392

[a] Dependent Variable: Istocno Sarajevo - uncultivated land.

Correlations	I. Sarajevo -uncultivated land	I. Sarajevo - unemployed	
Pearson Correlation - r	I. Sarajevo - uncultivated land	1.000	.352
	I. Sarajevo - unemployed	.352	1.000
Sig. (1-tailed)	I. Sarajevo - uncultivated land	.	.196
	I. Sarajevo - unemployed	.196	.

Table 6
The ratio of unemployment and uncultivated land in the Trebinje region

Coefficients [a]	Non standardized coefficients	Standardized coefficients	t	Sig.	Non standardized coefficients
	B	Std. Error	Beta		B
(Constant) − b_0	23 320.629	5 755.878		4.052	.007
Trebinje – unemployed – b_1	-.038	.671	-.023	-.057	.956

[a] Dependent Variable: Trebinje - uncultivated land.

Correlations	Trebinje -uncultivated land	Trebinje - unemployed	
Pearson Correlation - r	Trebinje - uncultivated land	1.000	-.023
	Trebinje - unemployed	-.023	1.000
Sig. (1-tailed)	Trebinje - uncultivated land	.	. 478
	Trebinje - unemployed	.478	.

Conclusions

The labour force in agriculture and rural areas traditionally immigrates to urban areas and are employed in non-agricultural activities. In times of economic crisis, the reverse tendencies are taking place and one part of the work force goes back to the villages and (temporarily) deals with agriculture. One of the indicators through which this can be observed is the increase of arable land. There were researches on linkages between the number of unemployed and uncultivated land in the Republic of Srpska (one of two entities in BaH) in the period 2002-10. Generally, in this period there was an increase of unemployment and the simultaneous increase of uncultivated land. This research applied a regional approach, and the phenomenon has been studied in six regions of this entity, in order to determine how each of these regions acts in relation to the hypothesis.

Based on the results, it can be concluded that only in the region of Bijeljina there is a high correlation (r = 0.752) between unemployment and uncultivated surfaces, although these two trends are moving in the same direction and evaluated regression model and Pearson's coefficient were statistically significant. In the remaining regions, rated models are not statistically significant. Region of Banja Luka has a significant correlation (-0.55) and points out the opposite direction of movement of the analyzed phenomena. A similar situation in terms of direction of these phenomena is seen in the regions of Prijedor and Trebinje. Doboj and Istocno Sarajevo regions have positive Pearson's coefficient, as well as Bijeljina region. According to the evaluated regression model, Trebinje, Banja Luka and Prijedor indicate that the current year unemployment influences the reduction of uncultivated areas next year, but rated models are not statistically significant.

References

Aceleanu, M. I., 2011. Implication of the financial crisis on the employment policies in Romania and EU countries. *Journal of International Scientific Publications,* **5** (Part 1): 4-13.

Bogdanov, N., P. Muncan and D. Bozic, 2010. Family farms in Serbia - whether agriculture is way out of poverty (SRB). *Proceedings of 21st Scientific Conference of Agriculture and Food industry,* Neum, pp. 483-492,

Ciaian, P., A. Kancs and J. Swinnen, 2010. EU land market and Common Agriculture Policy. *Centre for European Policy Studies,* Brussels, pp. 31.

Cohen, J. W., 1988. Statistical power analysis for the behavioural sciences (2nd edition), *Lawrence Erlbaum Associates.* Hillsdale, New Jersey, pp. 109-144.

Dachin, A., 2011. Contributions of Agriculture to Economic Fluctuations on Romania. *Theoretical and Applied Economic,* **XVIII,** No. 1 (554), pp. 151-162.

Garnett, A. and P. Lewis, 2007. Population and regional changes in regional Australia. *Economic Papers,* **26** (1): 29-43.

Grgic, I., G. Zupanac and M. Zrakic, 2011. Non-agricultural activities in rural areas of Zagreb County (CRO). 46st Croatian and 6th International Symposium on Agriculture, Opatija, Croatia, pp. 355-359.

Greeks Return to Farming as Country Leases Agricultural Land. http://digitaljournal.com/article/321487#ixzz1s1UxQx60 (on 12.03.2012.),

Horvath, P. and G. Nagy, 2011. Correlation between agriculture and rural development in a disadvantageous sub-region.

Proceedings of 46st Croatian and 6th International Symposium on Agriculture, Opatija, Croatia, pp. 360-364.

Krugman, P. and M. Obsfeld, 2003. International Economics, theory and policy. *Addison Wesley,* Boston, pp. 40-44.

Lahiri, H., 2011. Effect of Land Diversion from Agriculture to Industry in a Dualistic Economy. *Journal of Economics and Sustainable Development,* **2** (11&12): 11-15.

Leibus, I., I. Ozola and A. Irmeja, 2010. Role of self-employment in the sustainable economic development. *Journal of Social Sciences.* No.3, Klaipeda University, Social Science Faculty, pp. 253.-260.

Lovric, M., Komic, J. and Stevic, S., 2006. Statistical analyses, methods and examples (SRB). *Faculty of Economics.* Banja Luka, pp. 353-367.

Mijovic, D. and B. Paunovic, 2011. Regional Disparities in Serbia. *Ekonomika Poljoprivrede,* **59** (7-8): 379-389.

Miljkovic, D. and M. Nikolic, 1996. Development of the Republic of previous SFR Yugoslavia 1947-1990. year (SRB). *The State Institute for Statistic.* Belgrade, 90. pp.

Mirjanic, S., Z. Vasko, G. Rokvic, V. Mrdalj, A. Figurek, M. Srdic and R. Medojevic, 2012. Analysis of the implementation of the Republic of Srpska Agricultural Development Strategy in the period, 2007-2011. (SRB). *Ministry of Agriculture Forestry and Water Management of the Republic of Srpska.* Banja Luka, pp 43.

Spatial Plan of the Republic of Srpska until 2015 Year (SRB). 2008. *Planning Institute of the RS.* Banja Luka, pp. 41. and pp. 53-55.

Strategy of Rural Development of the Republic of Srpska, project report. 2008. *Faculty of Agriculture, Institute of Agricultural Economics.* Banja Luka, pp. 26.

Kare, S., P. Ronnas and L. Shamchiyeva, 2011. Employment diagnostic analyses: Bosnia and Herzegovina. *Employment Working Paper.* No. 86, ILO, pp. 18 and pp. 22-23.

Statistical Yearbook of the Republic of Srpska 2010 (SRB) 2010. *Republic Institute for Statistic.* Banja Luka, pp. 448-473.