# ЕКОНОМИКА
## ПОЉОПРИВРЕДЕ
# ECONOMICS OF
# AGRICULTURE

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# ECONOMICS OF AGRICULTURE

## CONTENT

# SUSTAINABLE GROWTH RATE OF AGRICULTURAL AND FOOD ENTERPRISES IN SERBIA [1]

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## Summary

*Many profitable businesses can get bankrupt if they grow too slowly or too fast. In order to assess whether a company is growing too slowly or too fast, it is necessary to establish a sustainable growth rate, that represents the maximum growth rate which the company can achieve without additional debt growing. The aim of this study is to determine the sustainable growth rate for the enterprises of the agricultural and food sector in Serbia in 2012 and 2013 and to determine whether there are differences between these two interconnected sectors. The construction sector which is not reproductively connected with agriculture and food ones, was introduced in the study as a control sector. The aim is also to establish a real sustainable growth rate of observed sectors in Serbia taking into consideration the inflation rate which in Serbia has visible fluctuations for the observed years. Real sustainable growth rate serves as a landmark for drawing conclusions about the development potential of these branches and as a conclusion of which internal or external incentives are needed to further increase sustainable growth rate, namely potential for growth. Limitation of the work scope focused research on identifying sustainable growth rate and mutual comparison of observed sectors and provided a basis for further research in the direction of the comparative analysis within the agricultural sector, as well as for determining agricultural activities with the greatest growth potential, expressed through the sustainable growth rate.*

***Keywords:*** *sustainable growth rate, the agricultural sector, food sector, dividend policy*

**JEL**: *Q 14, O 47, D 92, C10*

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# Introduction

The term sustainable growth rate of the company means the maximum growth rate which the company can achieve without new issues of equity and without additional debt growing. If the company is growing at a rate that is lower than sustainable, as a rule it can lead to stagnation of the company, loss of competitive position, and in the extreme case to bankruptcy of the company. On the other hand, if the company is growing at a rate that is higher than the sustainable growth rate, the company may be imposed in financial troubles, lack of liquidity, and ultimately, it may also lead to the bankruptcy of the company. In order to be able to finance rapid growth, a company has at its disposal multiple options that can have internal or external orientation. Internal options may be aimed at increasing production efficiency, improving total asset turnover ratios and all of its individual parts, and external options may be facing increasing debt or recapitalization through a new issue of shares.

The subject of this paper is to analyze the sustainable growth rate of agricultural and food enterprises in Serbia. From the theoretical point of defining research subject, the methodology for determining sustainable growth rate is shown, as well as the research results of some foreign authors.

In accordance with the modern techniques of the methodology of scientific research, conducted research has both theoretical and empirical character. The theoretical aspect of the analysis is supported by knowledge based on foreign expert, scientific sources and findings of other authors who have dealt with this issue. Empirical aspect of the analysis is supported by the current study of the authors with statistical representations performed on basis of official data.

Based on the specificity and complexity of the studied topic in order to satisfy the basic methodological requirements of objectivity, reliability, generality and systematics, in this research the basic scientific methods of analysis and synthesis, inductive and deductive methods, description and method of comparison, as well as general research methods such as comparative-historical method, statistical method and hypothetical - deductive method were used. Among the methods of data collection the method of content analysis of documents was used.

The study focuses on the enterprises in Serbia and their comparative analysis. We analyzed 20 agricultural enterprises, 20 enterprises of the food industry and 20 construction enterprises. Attention is focused on the agricultural sector and enterprises of this sector, because thanks to its natural predispositions Serbia has great development opportunities in the field of agricultural production. Since the agricultural production is base for development of the food industry, hence this industry has great development potential in mutual coupling between agriculture and food industries. That fact identified a particular interest of authors to analyze sustainable growth rates of these two industries. Construction enterprises are the third group of enterprises in which this research determined sustainable growth rate. For the construction industry it could be said that it is reproductively independent from agricultural production and

food industry, which are mutually reproductively linked. Therefore, the construction enterprises were selected as a control sector independent from the agricultural and food enterprises sectors.

The study is a comparative analysis of the sustainable growth rate of agricultural, food and construction enterprises, in 2012 and 2013. According to the authors' knowledge in Serbia there was not any research done on the topic of establishing a sustainable growth rate of a company in this way and for this period, hence the aim of this paper is to show the methodology for calculating the sustainable growth rate, and based on it calculate the growth rate for 60 enterprises from Serbia in 2012 and 2013, from agriculture, food and construction sectors. It also seeks to determine whether or not there are significant differences between them in the amount of sustainable growth rates in 2013 compared to the year 2012. In addition, we analyze the relationship between the sustainable growth rate and the inflation rate in order to determine the real potential for growth in these sectors.

Bearing in mind the above mentioned, the report is based on the following proposed hypothesis:

H1: There is no significant difference between the sustainable growth rate of agricultural, food and construction industry enterprises.

H2: There is no statistically significant difference in the level of sustainable growth rates of agricultural, food and construction enterprises in 2012.

H3: There is no statistically significant difference in the level of sustainable growth rates of agricultural, food and construction enterprises in 2013.

H4: There is no statistically significant difference in the level of sustainable growth rates of agricultural, food and construction enterprises, as well as in the level of sustainable growth rates of all the enterprises in the taken sample in 2013 compared to 2012.

H5: There is no statistically significant difference between the average sustainable growth rate and inflation rate in 2012.

H6: There is no statistically significant difference between the average sustainable growth rate and inflation rate in 2013.

## Literature rewiew

By determining the growth rate that the company can afford stating that unbridled growth could be contrary to financial policy of the company (Higgins, RC, 1977), it can be concluded that in terms of maintaining the desired capital structure and targeted ratio of dividend payments, without issuing new shares, sustainable growth rate represents percentage in increased sales in accordance with the financial policy of the company. The increase in sales over the sustainable growth rate creates for the company financial problems by requiring new loans to finance rapid growth. Since increase in sales may be a result of the increased volume of products or increased prices of the product,

the impact of inflation on a sustainable growth rate is considered as well (Higgins, RC, 1981). One of the important tasks for both small business owners, and managers of large corporations is to establish a sustainable growth rate, namely the maximum growth rate that the company can sustain without increasing its financial leverage (Brealey, Myers, 2003). The sustainable growth rate is also defined as the growth rate of dividends (and profit) that can be held for a given level of return of capital, under the assumption that the constant capital structure is kept, and that additional share issues are not issued (Pinto et al., 2010; Gordon, 1959; Fuller, Hsia, 1984). In determining the sustainable growth rate one should start from the real possibilities of a company and from situation at the financial market and then to determine, based on the target operating  ratio, debt and dividend payments, the maximum increase percentage in sales revenue, with an emphasis that any increase in assets must be equal to the increase in liabilities and equity capital through increase in retained earnings (Van Horne, Wachowicz, 2007). By implementing moderate mathematical modification of Higginson's model for calculating the leverage ratio by taking the same cut-off date for total assets and shareholders' equity at the beginning of the period, instaed at the end of the period as Higginson did, the accuracy of Higginson's model was improved (Ashta, 2008). It was  investigated which model is more suitable for determining the sustainable growth rate by comparing Higginson's and Van Horn's models (Fonseca et al., 2012). It was concluded that in determining the sustainable growth rate of profitable enterprises Higginson's  model gives higher sustainable growth rate than Van Horn's model. The same study revealed that in companies with high leverage, Van Horn's model provides a higher sustainable growth rate than Higginson's model, but it was concluded that the differences in the models are not significant and that both models give satisfactory results in the study.

The company's ability to fund its  future development was studied on the example of the sustainable growth rate of an airline (Chang, YC, 2012). Analyzed actual and sustainable Higgins growth rate showed large fluctuations until the moment when studied airline merged with another airline. After the merger of these two airlines,  a gradual increase and convergence of actual and sustainable growth rates were recorded. The relation between actual and sustainable growth rates was investigated in the case of US gas industry in the period from 1970 to 1990 (Clouse, McFaddin, 1994). Research showed that the potential for sustainable growth in US gas industry is in the future shares issuing, operational improvements and change of financial goals. It was concluded that the model of sustainable growth represents an efficient tool for financial planning and directing the business policy toward growth stimulation in this industry. The relation between the current and sustainable growth rates of small and medium-sized enterprses in Canada in the period 2000-2010 was investigated on the example of several economic sectors:  primary, construction, manufacturing, wholesale trade, retail trade, science and technology, accommodation and food services and other services (Seens, 2013). The results support the hypothesis  that the sector of the firm does affect the firm's sustainable growth rate. The differences in growth rates between sectors were

found to be statistically significant. The sustainable growth rate of the construction and service sectors were significantly higher than in the primary and manufacturing sectors. The manner in which the two car companies in India, Tata Motors and Maruti Suzuki used internally generated funds to improve their operational and financial performance, achieve progress and use the rapidly growing car industry, was shown by the case study on the measures' improving to achieve sustainable growth rates of these two companies (Virani, 2013). Higginson's model of sustainable growth model that optimizes the sustainable growth rate and ratio of dividend payouts was extended by the study of the relation between investment decisions on the optimal growth and dividend policy (Chen et al., 2013). This research has shown that the covariance between profitability and growth rate is one of the determinants of dividend policy and that the interaction between the risk of profitability and growth rate can affect the permanent ceasing of dividend payouts of companies.

## The methodology of determining the sustainable growth rate

Calculation of the sustainable growth rate was done on the database of 60 enterprises from the Republic of Serbia (20 enterprises from each of the three sectors – agriculture, food and construction) whose shares are traded on the Belgrade Stock Exchange. The stratified sampling method was used in the process of forming the sample, by forming three strata, which were comprised of all companies whose shares are traded on the BSE, and which, at the same time were part of the agriculture, food or construction sectors. Prime sample of 20 companies was elected for each of the three observed strata. The union of such three random, simple samples constitute stratified sample on which basis the subject research is made. Data about the inflation rate as measured by the consumer price index for 2012 and 2013 are taken from the website of the Ministry of Finance of the Republic of Serbia (Ministarstvo finansija, 2014).

For determinating sustainable growth rate the next formula can be used:

g = b x ROE

where:

g - is sustainable growth rate

b - is retention rate (plowback ratio)

ROE - return on equity

Retentio rate (b) is calculated using the next formula:

b = 1 - dividend payout ratio = (net income - dividends) / net income

By applying DuPont analysis, the rate of return on equity can be broken down into the following components: profit margin, total assets turnover ratio and equity multiplier (Stowe, J., 2000):

ROE = profit margin x total assets turnover ratio x equity multiplier

$$\text{ROE} = \frac{\text{Net income}}{\text{Shareholders equity}} = \frac{\text{Net income}}{\text{Sales revenue}} \text{ x } \frac{\text{Sales revenue}}{\text{Total assets}} \text{ x } \frac{\text{Total assets}}{\text{Shareholdes'equity}}$$

On this basis, the initial formula for calculating the sustainable growth rate can be transformed into (Stowe, J., 2000):

$$g = \frac{\text{Net income - Dividends}}{\text{Net income}} \text{ x } \frac{\text{Net income}}{\text{Sales revenue}} \text{ x } \frac{\text{Sales revenue}}{\text{Total assets}} \text{ x } \frac{\text{Total assets}}{\text{Shareholdes'equity}}$$

The paper uses this expanded form of the formula for calculating the sustainable growth rate, since it may provide useful information in analyzing the factors that affect its height.

To test the hypothesis 2 and 3, ie. to determine the existence of statistically significant differences among the sustainable growth rate of enterprises in the agricultural, food and construction sectors in 2012 and 2013 Kruskal-Wallis's test was used.

To test the hypothesis 4, ie. to determine the existence of statistically significant differences in the overall level of sustainable growth rates in 2013 compared to 2012, the Wilcoxon Signed Rank test was used.

Testing of hypotheses 5 and 6 in order to determine whether there is a statistically significant difference between the average sustainable growth rate of sampled companies and the inflation rate in 2012 and 2013 was based on One-Sample T test.

For all calculations software package IBM SPSS Statistics 19 was used.

### Establishing sustainable growth rate on agricultural and food enterprises in Serbia

Based on previouly established methodology sustainable growth rates (g) for 20 sampled **agricultural companies** in 2012 and 2013 were calculated. The results are shown in Tables 1 and 2.

**Table 1.** Sustainable growth rates of sampled agricultural enterprises in 2012

| Enterprise | b | ROE | profit margin | total assets turnover ratio | equity multiplier | g |
|---|---|---|---|---|---|---|
| | (1) | (2) = (3*4*5) | (3) | (4) | (5) | (6) = (1*2) |
| Agrobačka, Bačka Topola | 1.00 | 1.23 | 2.01 | 0.57 | 1.05 | 1.23 |
| Bezdan, Bezdan | 1.00 | 13.49 | 39.05 | 0.34 | 1.02 | 13.49 |
| Borac, Šurjan | 0.81 | 24.73 | 9.31 | 1.48 | 1.80 | 20.03 |

| Enterprise | b | ROE | profit margin | total assets turnover ratio | equity multiplier | g |
|---|---|---|---|---|---|---|
| | (1) | (2) = (3*4*5) | (3) | (4) | (5) | (6) = (1*2) |
| Graničar, Konak | 0.75 | 28.37 | 18.99 | 1.25 | 1.20 | 21.28 |
| Hajdučica, Hajdučica | 1.00 | 2.05 | 1.06 | 1.13 | 1.72 | 2.05 |
| Kačarevo, Kačarevo | 1.00 | 12.70 | 11.32 | 0.69 | 1.63 | 12.70 |
| Omoljica, Omoljica | 1.00 | 9.62 | 19.48 | 0.40 | 1.24 | 9.62 |
| Lučić, Prigrevica | 1.00 | 1.24 | 4.54 | 0.16 | 1.72 | 1.24 |
| Napredak, Stara Pazova | 1.00 | 2.13 | 4.23 | 0.37 | 1.37 | 2.13 |
| Dragan Marković, Obrenovac | 1.00 | 0.77 | 0.80 | 0.33 | 2.89 | 0.77 |
| PKB Korporacija, Beograd | 1.00 | 1.39 | 6.28 | 0.14 | 1.62 | 1.39 |
| Orahovo, Novo Orahovo | 1.00 | 5.89 | 2.39 | 1.28 | 1.94 | 5.89 |
| PD Zaječar, Zaječar | 1.00 | 17.26 | 33.82 | 0.44 | 1.16 | 17.26 |
| Pionir, Srbobran | 0.38 | 27.39 | 25.53 | 0.95 | 1.12 | 10.41 |
| Pobeda, Pobeda | 1.00 | 0.63 | 0.48 | 0.71 | 1.84 | 0.63 |
| Podunavlje, Čelarevo | 1.00 | 6.12 | 14.87 | 0.15 | 2.77 | 6.12 |
| Sava Kovačević, Vrbas | 0.72 | 11.16 | 11.73 | 0.38 | 2.48 | 8.04 |
| Sloga, Kać | 1.00 | 6.23 | 26.33 | 0.19 | 1.24 | 6.23 |
| Vino Kalem, Velika drenova | 1.00 | 45.97 | 16.56 | 0.57 | 4.85 | 45.97 |
| Vojvodina, Sombor | 1.00 | 1.64 | 2.79 | 0.30 | 1.94 | 1.64 |

*Source:* Representation by the authors based on data from www.belex.rs

**Table 2.** Sustainable growth rates of sampled agricultural enterprises in 2013

| Enterprise | b | ROE | profit margin | total assets turnover ratio | equity multiplier | g |
|---|---|---|---|---|---|---|
| | (1) | (2) = (3*4*5) | (3) | (4) | (5) | (6) = (1*2) |
| Agrobačka, Bačka Topola | 0.999 | 0.95 | 1.63 | 0.47 | 1.22 | 0.95 |
| Bezdan, Bezdan | 1.00 | 10.40 | 25.06 | 0.40 | 1.05 | 10.40 |
| Borac, Šurjan | 0.76 | 15.05 | 6.39 | 1.38 | 1.71 | 11.44 |
| Graničar, Konak | -3.32 | 4.44 | 3.29 | 1.15 | 1.17 | -14.74 |
| Hajdučica, Hajdučica | 1.00 | 0.46 | 0.31 | 0.86 | 1.74 | 0.46 |
| Kačarevo, Kačarevo | 1.00 | 7.35 | 9.32 | 0.52 | 1.51 | 7.35 |
| Omoljica, Omoljica | 1.00 | 0.27 | 2.47 | 0.10 | 1.06 | 0.27 |
| Lučić, Prigrevica | 1.00 | 1.52 | 5.41 | 0.17 | 1.63 | 1.52 |
| Napredak, Stara Pazova | 1.00 | 1.49 | 3.20 | 0.35 | 1.33 | 1.49 |
| Dragan Marković, Obrenovac | 1.00 | 0.77 | 1.28 | 0.29 | 2.11 | 0.77 |

| Enterprise | b | ROE | profit margin | total assets turnover ratio | equity multiplier | g |
|---|---|---|---|---|---|---|
| | (1) | (2) = (3*4*5) | (3) | (4) | (5) | (6) = (1*2) |
| PKB Korporacija, Beograd | 1.00 | 9.12 | 46.13 | 0.14 | 1.43 | 9.12 |
| Orahovo, Novo Orahovo | 1.00 | 17.01 | 8.34 | 1.09 | 1.85 | 17.01 |
| PD Zaječar, Zaječar | 1.00 | 3.91 | 6.18 | 0.55 | 1.15 | 3.91 |
| Pionir, Srbobran | 0.16 | 21.80 | 23.89 | 0.78 | 1.17 | 3.49 |
| Pobeda, Pobeda | 1.00 | 1.13 | 0.75 | 0.83 | 1.80 | 1.13 |
| Podunavlje, Čelarevo | 1.00 | 3.38 | 7.80 | 0.15 | 2.85 | 3.38 |
| Sava Kovačević, Vrbas | 0.80 | 21.72 | 29.84 | 0.39 | 1.85 | 17.38 |
| Sloga, Kać | 1.00 | 1.62 | 6.34 | 0.21 | 1.20 | 1.62 |
| Vino Kalem, Velika drenova | 1.00 | 32.46 | 13.52 | 0.58 | 4.12 | 32.46 |
| Vojvodina, Sombor | 1.00 | 6.09 | 9.94 | 0.37 | 1.64 | 6.09 |

*Source:* Representation by the authors based on data from www.belex.rs

It may be noted that there was no change in the policy of dividend payouts – during both years the same four companies paid out part of the profit as dividends to its shareholders, while sixteen companies did not pay dividends to shareholders, i.e. reinvested overall profit. Agricultural companies that payout dividends from net profit and thus reinvest a smaller share of the profit do not have, as might be expected, the lowest sustainable growth rate. The reason is that these companies have high rate on return on equity – ROE. The exception is the company Graničar – Konak, which paidout dividends for 2013 from the overall profit in 2013 and from retained earnings from previous years, realizing negative sustainable growth rate of – 14.74%.

The greatest impact on the achieved sustainable growth rate of these agricultural enterprises has profit margin, which is directly transferred to the ROE. The enterprise Bezdan - Bezdan achieved the highest rate of profit margin in 2012 (39.05%), and in 2013, it did PKB Corporation Belgrade (46.13%). The ratio of total asset turnover is relatively stable (avarage of 0.59 in 2012; 0.54 in 2013), wherein enterprise Borac, Šurjan expressed the highest efficiency of total assets, 1.48 in 2012 and 1.38 in 2013. Own capital multiplier is also relatively stable and it ranges from 1.02 to 4.85, wherein this indicator for most observed agricultural enterprise is between levels 1 and 2. The highest level of own capital multiplier was recorded by Vino Kalem - Velika Drenova (4.85 in 2012 and 4.12 in 2013), indicating high reliance on borrowed sources of financing.

Sustainable growth rates (g) for the 20 sampled enterprises from **food sector** in 2012 and 2013 are shown in Tables 3 and 4.

**Table 3.** Sustainable growth rates of sampled enterprises of food sector in 2012

| Enterprise | b | ROE | profit margin | total assets turnover ratio | equity multiplier | g |
|---|---|---|---|---|---|---|
| | (1) | (2) = (3*4*5) | (3) | (4) | (5) | (6) = (1*2) |
| Bag, Bačko Gradište | 1.00 | 9.65 | 13.68 | 0.57 | 1.24 | 9.65 |
| Bambi, Požarevac | 0.80 | 25.87 | 13.48 | 0.98 | 1.95 | 20.70 |
| Banat fabrika ulja, Nova Crnja | -8.04 | 2.73 | 1.12 | 1.12 | 2.17 | -21.95 |
| Čokolend, Paraćin | 0.25 | 7.39 | 2.59 | 1.46 | 1.96 | 1.85 |
| Dijamant, Zrenjanin | 1.00 | 16.43 | 9.61 | 0.78 | 2.20 | 16.34 |
| Oreovica, Oreovica | 1.00 | 1.93 | 0.16 | 4.06 | 2.87 | 1.93 |
| Imlek, Beograd | 0.83 | 25.21 | 13.12 | 0.86 | 2.24 | 20.92 |
| Jabuka, Pančevo | 1.00 | 3.97 | 1.09 | 0.87 | 4.17 | 3.97 |
| Klanica 8 oktobar, Petrovac | 1.00 | 2.85 | 0.20 | 2.76 | 5.12 | 2.85 |
| Medela, Vrbas | 1.00 | 5.96 | 9.58 | 0.53 | 1.18 | 5.96 |
| Mlekara, Loznica | 1.00 | 8.73 | 1.32 | 3.60 | 1.84 | 8.73 |
| Mlinprodukt, Ada | 1.00 | 4.16 | 2.27 | 1.01 | 1.81 | 4.16 |
| Neoplanta, Novi Sad | 1.00 | 8.84 | 5.96 | 0.89 | 1.67 | 8.84 |
| Niška mlekara, Niš | 1.00 | 11.69 | 2.98 | 1.53 | 2.56 | 11.69 |
| Rubin, Kruševac | 1.00 | 12.26 | 23.11 | 0.27 | 1.95 | 12.26 |
| Sreten Gudurić, Užice | 0.26 | 12.27 | 2.65 | 2.33 | 1.99 | 3.19 |
| Pekarstvo, Kraljevo | -0.64 | 4.54 | 1.85 | 1.09 | 2.25 | -2.91 |
| Žitobanat, Vršac | 0.52 | 8.17 | 3.17 | 1.60 | 1.62 | 4.25 |
| Žitopromet - mlin, Senta | 1.00 | 16.35 | 4.62 | 1.21 | 2.92 | 16.35 |
| TE – TO, Senta | 0.54 | 52.67 | 16.80 | 1.35 | 2.33 | 28.44 |

*Source:* Representation by the authors based on data from www.belex.rs

**Table 4.** Sustainable growth rates of sampled enterprises of food sector in 2013

| Enterprise | b | ROE | profit margin | total assets turnover ratio | equity multiplier | g |
|---|---|---|---|---|---|---|
| | (1) | (2) = (3*4*5) | (3) | (4) | (5) | (6) = (1*2) |
| Bag, Bačko Gradište | 1.00 | 4.45 | 5.56 | 0.76 | 1.05 | 4.45 |
| Bambi, Požarevac | 0.80 | 33.69 | 18.86 | 1.10 | 1.63 | 26.95 |
| Banat fabrika ulja, Nova Crnja | 0.99 | 29.26 | 12.89 | 0.91 | 2.50 | 28.97 |
| Čokolend, Paraćin | 0.16 | 3.75 | 1.24 | 1.59 | 1.91 | 0.60 |
| Dijamant, Zrenjanin | 1.00 | 14.60 | 8.58 | 0.65 | 2.61 | 14.60 |
| Oreovica, Oreovica | 1.00 | 1.61 | 0.15 | 3.23 | 3.32 | 1.61 |

| Imlek, Beograd | 0.49 | 22.09 | 10.87 | 0.78 | 2.61 | 10.82 |
| Jabuka, Pančevo | 1.00 | 23.77 | 8.06 | 1.08 | 2.73 | 23.77 |
| Klanica 8 oktobar, Petrovac | 1.00 | 2.83 | 0.15 | 4.48 | 4.13 | 2.83 |
| Medela, Vrbas | 1.00 | 1.96 | 3.32 | 0.51 | 1.15 | 1.96 |
| Mlekara, Loznica | 1.00 | 7.93 | 1.12 | 3.19 | 2.22 | 7.93 |
| Mlinprodukt, Ada | 1.00 | 6.06 | 2.45 | 1.26 | 1.97 | 6.06 |
| Neoplanta, Novi Sad | 1.00 | 3.61 | 3.53 | 0.78 | 1.31 | 3.61 |
| Niška mlekara, Niš | 1.00 | 14.41 | 3.50 | 1.60 | 2.57 | 14.41 |
| Rubin, Kruševac | 1.00 | 7.71 | 18.20 | 0.26 | 1.62 | 7.71 |
| Sreten Gudurić, Užice | 1.00 | 7.68 | 1.74 | 2.25 | 1.95 | 7.68 |
| Pekarstvo, Kraljevo | 1.00 | 2.14 | 1.24 | 0.80 | 2.16 | 2.14 |
| Žitobanat, Vršac | 0.62 | 6.07 | 2.54 | 1.84 | 1.30 | 3.76 |
| Žitopromet - mlin, Senta | 1.00 | 15.45 | 4.20 | 1.46 | 2.52 | 15.45 |
| TE – TO, Senta | 0.64 | 18.91 | 8.24 | 0.99 | 2.33 | 12.10 |

*Source:* Representation by the authors based on data from www.belex.rs

In 2012 eight companies paidout dividends, and of those eight, two companies (Banat oil factory and Pekarstvo – Kraljevo) paidout higher dividends from the level of the profit on the basis of retained earnings of previous years, which caused negative sustainable growth rate. In 2013, there was a tightening of dividend policy, hence five enterprises paidout dividends from the profit, while none of the enterprises paidout dividends from retained earnings of previous years. It is interesting that the highest sustainable growth rate had companies that paidout the dividend for that year, primarily due to the high ROE levels.

The hihest level of profit margins in 2012 was achieved by Rubin – Kruševac 23.11% and in 2013 by Bambi – Požarevac 18,86%. The total asset turnover ratio of food sector is also relatively stable (the average of 1.44 in 2012 and 1.48 in 2013), but it is more than twice the size in the companies of agricultural sector. Own capital multiplier of food enterprises shows relatively stable amounts and it ranges from 1.05 to 5.12, while this indicator for most of these companies is at the level of about 1.05 to 2.5, ie. on a slightly higher level than in agricultural companies.

It may be noted that the companies of the food sector have somewhat higher rate of return on equity then the companies of the agricultural sector and that agricultural enterprises have significantly higher rates of profit margins then food companies, but lower use efficency of total assets and lower own capital multipliers.

Tables 5 and 6 show sustainable growth rate (g) for the 20 sampled enterprises of the **construction sector** in 2012 and 2013.

**Table 5.** Sustainable growth rates of sampled construction enterprises in 2012

| Enterprise | b | ROE | profit margin | total assets turnover ratio | equity multiplier | g |
|---|---|---|---|---|---|---|
| | (1) | (2) = (3*4*5) | (3) | (4) | (5) | (6) = (1*2) |
| Energomontaža, Beograd | 1.00 | 1.08 | 0.46 | 1.02 | 2.31 | 1.08 |
| Energoprojekt oprema, Beograd | 1.00 | 24.43 | 2.37 | 2.72 | 3.79 | 24.43 |
| Erozija, Valjevo | 1.00 | 0.61 | 0.29 | 0.88 | 2.36 | 0.61 |
| Geosonda – Fundiranje, Beograd | 1.00 | 7.51 | 7.57 | 0.42 | 2.36 | 7.51 |
| Geosonda Konsolidacija, Beograd | 1.00 | 0.08 | 0.23 | 0.29 | 1.20 | 0.08 |
| Graditelj, Beograd | 1.00 | 0.45 | 0.15 | 1.45 | 2.10 | 0.45 |
| Termika, Beograd | 0.73 | 33.84 | 17.23 | 1.56 | 1.26 | 24.70 |
| Hidrotehnika -hidroenergetika, Beograd | 1.00 | 0.72 | 0.35 | 0.72 | 2.85 | 0.72 |
| Zlatibor gradnja, Beograd | 0.91 | 40.02 | 12.50 | 1.91 | 1.68 | 36.42 |
| Izoprogres, Beograd | 0.91 | 28.58 | 25.98 | 0.74 | 1.48 | 26.01 |
| Jedinstvo, Sevojno | 0.61 | 11.12 | 5.88 | 0.97 | 1.95 | 6.78 |
| Napredak, Pirot | 1.00 | 0.79 | 0.29 | 1.82 | 1.50 | 0.79 |
| Novi Pazar put, Novi Pazar | 0.63 | 11.42 | 4.99 | 1.04 | 2.19 | 7.19 |
| Planum, Beograd | 0.00 | 2.17 | 1.05 | 0.88 | 2.36 | 0.00 |
| Putevi, Čačak | 1.00 | 15.08 | 4.93 | 0.88 | 3.49 | 15.08 |
| Putevi, Užice | 1.00 | 1.21 | 0.13 | 0.95 | 9.58 | 1.21 |
| PZP Požarevac, Požarevac | 1.00 | 3.22 | 1.08 | 1.32 | 2.27 | 3.22 |
| Srbijaput, Beograd | 1.00 | 3.39 | 0.26 | 2.30 | 5.60 | 3.39 |
| Sremput, Ruma | 1.00 | 2.11 | 1.13 | 0.79 | 2.39 | 2.11 |
| Standard, Leskovac | 1.00 | 3.55 | 3.26 | 0.76 | 1.43 | 3.55 |

*Source:* Representation by the authors based on data from www.belex.rs

**Table 6.** Sustainable growth rates of sampled construction enterprises in 2013

| Enterprise | b | ROE | profit margin | total assets turnover ratio | equity multiplier | g |
|---|---|---|---|---|---|---|
| | (1) | (2) = (3*4*5) | (3) | (4) | (5) | (6) = (1*2) |
| Energomontaža, Beograd | 1.00 | 1.11 | 0.68 | 0.73 | 2.25 | 1.11 |
| Energoprojekt oprema, Beograd | 1.00 | 21.06 | 3.66 | 1.68 | 3.42 | 21.06 |

| Enterprise | b | ROE | profit margin | total assets turnover ratio | equity multiplier | g |
|---|---|---|---|---|---|---|
| | (1) | (2) = (3*4*5) | (3) | (4) | (5) | (6) = (1*2) |
| Erozija, Valjevo | 1.00 | 9.12 | 5.69 | 0.72 | 2.22 | 9.12 |
| Geosonda – Fundiranje, Beograd | 1.00 | 0.11 | 0.15 | 0.30 | 2.57 | 0.11 |
| Geosonda Konsolidacija, Beograd | 1.00 | 0.39 | 0.21 | 0.92 | 2.01 | 0.39 |
| Graditelj, Beograd | 1.00 | 0.03 | 0.03 | 0.62 | 1.84 | 0.03 |
| Termika, Beograd | 0.00 | 4.55 | 4.59 | 0.94 | 1.06 | 0.00 |
| Hidrotehnika -hidroenergetika, Beograd | 1.00 | 0.13 | 0.08 | 0.55 | 3.01 | 0.13 |
| Zlatibor gradnja, Beograd | 0.50 | 7.94 | 4.65 | 1.06 | 1.61 | 3.97 |
| Izoprogres, Beograd | 1.00 | 11.62 | 32.34 | 0.33 | 1.10 | 11.62 |
| Jedinstvo, Sevojno | 0.64 | 11.20 | 5.98 | 0.98 | 1.90 | 7.17 |
| Napredak, Pirot | 1.00 | 0.09 | 0.07 | 1.10 | 1.31 | 0.09 |
| Novi Pazar put, Novi Pazar | 1.00 | 5.54 | 4.35 | 0.78 | 1.63 | 5.54 |
| Planum, Beograd | 0.98 | 2.53 | 0.80 | 0.92 | 3.43 | 2.48 |
| Putevi, Čačak | 1.00 | 7.92 | 4.86 | 0.52 | 3.16 | 7.92 |
| Putevi, Užice | 1.00 | 7.88 | 0.55 | 2.41 | 5.93 | 7.88 |
| PZP Požarevac, Požarevac | 1.00 | 1.07 | 0.68 | 0.90 | 1.74 | 1.07 |
| Srbijaput, Beograd | 1.00 | 3.39 | 0.37 | 1.82 | 5.06 | 3.39 |
| Sremput, Ruma | 1.00 | 0.24 | 0.22 | 0.40 | 2.68 | 0.24 |
| Standard, Leskovac | 1.00 | 0.52 | 0.86 | 0.47 | 1.30 | 0.52 |

*Source:* Representation by the authors based on data from www.belex.rs

In 2012 six companies paidout dividends, where one company, Planum, paidout dividends in the amount of net profit and thus recorded zero sustainable growth rate. In 2013, in the sector of construction companies there was introduced stricter dividend policy and only four companies paid out dividends from the profit.

The highest rate of return on equity in 2012 was achieved in construction company Zlatibor gradnja - Belgrade with 40.02%, and in 2013 Energoprojekt oprema - Belgrade with 21.06%. The highest rate of profit margins in 2012 and 2013 had the company Izoprogres – Belgrade, 25.98% in 2012 and 32.34% in 2013. The ratio of total asset turnover of construction enterprises decreased and its average was 1.17 in 2012 and 0.91 in 2013. The highest use efficiency of total assets was reported in the enterprises Energoprojekt oprema 2.72 in 2012 and Putevi Užice 2.41 in 2013. Own capital multiplier of construction enterprises ranges from 1.06 to 9.58, wherein this indicator for a larger number of construction enterprises is at a level of about 2 and over 3, ie. at a much higher level than in the agricultural and food enterprises. In both years, the

highest level of own capital multiplier was recorded in the enterprise Putevi Užice 9.58 in 2012 and 5.93 in 2013.

Generally, the high level of own capital multiplier indicates that these enterprises are considerably more reliant on borrowed sources of financing than the sampled agricultural and food enterprises, namely they have significantly higher level of indebtedness compared to analyzed agricultural and food enterprises, which is in line with the results of existing research (Racic et al., 2011).

### Comparative analysis of sustainable growth rate of enterprises in Serbia

After establishing a sustainable growth rate of agricultural, food and construction enterprises, the question is whether there is a significant difference among them and what is the relationship between sustainable growth rate and the inflation rate in order to establish the real growth potential. The average value of sustainable growth rate of enterprises in the sample of different sectors is shown in Table 7.

**Table 7.** Descriptive statistics of sustainable growth rate values of sampled enterprises

| | | Agriculture 2012 | Agriculture 2013 | Food industry 2012 | Food industry 2013 | Construction 2012 | Construction 2013 |
|---|---|---|---|---|---|---|---|
| N | Valid | 20 | 20 | 20 | 20 | 20 | 20 |
| | Missing | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | | 9.406 | 5.775 | 7.861 | 9.8705 | 8.2665 | 4.192 |
| Median | | 6.175 | 3.435 | 7.345 | 7.695 | 3.305 | 1.795 |
| Std. Deviation | | 10.84075 | 9.34073 | 10.53863 | 8.55146 | 10.92532 | 5.39729 |
| Skewness | | 2.206 | 0.915 | -0.706 | 1.088 | 1.466 | 1.815 |
| Std. Error of Skewness | | 0.512 | 0.512 | 0.512 | 0.512 | 0.512 | 0.512 |
| Kurtosis | | 6.181 | 3.334 | 2.634 | 0.29 | 1.033 | 3.894 |
| Std. Error of Kurtosis | | 0.992 | 0.992 | 0.992 | 0.992 | 0.992 | 0.992 |
| Minimum | | 0.63 | -14.74 | -21.95 | 0.6 | 0 | 0 |
| Maximum | | 45.97 | 32.46 | 28.44 | 28.97 | 36.42 | 21.06 |

*Source:* Representation by the authors based on SPSS

Using comparative analysis it can be identified that in 2012, enterprises from agricultural sector had the highest sustainable growth rate (9.4060%), while in 2013 those were food enterprises ( 9.8705%). In 2012 enterprises from food sector had the lowest sustainable growth rate (7.8610%), and in 2013 construction sector enterprises (4.1920%). The maximum deviation from the average values of the individual sustainable growth rate is recorded in construction enterprises in 2012, while in 2013 it was recorded in agricultural enterprises. Small deviations of the average sustainable

growth rate between the food enterprises can be noticed from year 2012 to year 2013, while in the agricultural and construction enterprises this deviation is higher than in the previous year.

The normality test of sustainable growth rate distribution showed that *the hypothesis of normal sustainable growth rate distribution can not be accepted for enterprises from the construction and the agricultural sector in 2012, and for all three sectors' enterprises in 2013* (Shapiro-Wilk, Sig. <0.05) (Table 8).

**Table 8.** Testing normality of distribution of sustainable growth rate

| Tests of Normality | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Activity | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
| | | Statistic | df | Sig. | Statistic | df | Sig. |
| Sustainable growth rate 2012 | 1 | 0.209 | 20 | 0.022 | 0.76 | 20 | 0 |
| | 2 | 0.184 | 20 | 0.074 | 0.927 | 20 | 0.138 |
| | 3 | 0.278 | 20 | 0 | 0.746 | 20 | 0 |
| Sustainable growth rate 2013 | 1 | 0.228 | 20 | 0.008 | 0.87 | 20 | 0.012 |
| | 2 | 0.19 | 20 | 0.057 | 0.869 | 20 | 0.011 |
| | 3 | 0.219 | 20 | 0.013 | 0.778 | 20 | 0 |

*Source:* Representation by the authors based on SPSS

Hence, the Kruskal-Wallis-test was used in order to establish existance of statistically significant differences in the level of sustainable growth rate of observed sector enterprises. Results of testing hypotheses 2 and 3 based on the Kruskal-Wallis-test showed that there is no statistically significant difference among sustainable growth rates of enterprises from the listed sectors ($c^2$ (2, n = 60) = 1.527, p = 0.466 for 2012 and $c^2$ (2, n = 60) = 8.181, p = 0.017 for 2013). On this basis, it can be concluded that *the differences in the sustainable growth rate of enterprises from different sectors are random and that the medians in 2012 are equal for agriculture and food sectors, while they are different in all three sets (strata) in 2013* (Table 9).

**Table 9.** Results of the Kruskal-Wallis - test for 2012 and 2013

| Test Statistics[a,b] | | |
|---|---|---|
| | **Sustainable grow. rate_2012** | **Sustainable grow. rate 2013** |
| Chi-Square | 1.527 | 8.181 |
| df | 2 | 2 |
| Asymp. Sig. | .466 | .017 |
| a. Kruskal Wallis Test | | |
| b. Grouping Variable: Activity | | |

| Frequencies | | | | |
|---|---|---|---|---|
| | | Activity | | |
| | | 1= agricult. | 2= food | 3= construc. |
| Sustainable grow. rate2012 | > Median | 11 | 11 | 8 |
| | <= Median | 9 | 9 | 12 |
| Sustainable grow. rate2013 | > Median | 9 | 13 | 8 |
| | <= Median | 11 | 7 | 12 |

*Source:* Representation by the authors based on SPSS

For the evaluation of statistically significant difference in the level of sustainable growth rate of a sector and sustainable growth rates of all observed enterprises in 2013 compared to 2012 , for testing hypotheses 4, Wilcoxon Signed Rank was used (Table 10).

**Table 10.** Results of the Wilcoxon Signed Rank test for 2012 and 2013

| Test Statistics[b] | | | | |
|---|---|---|---|---|
| | **Agriculture_2013- Agriculture_2012** | **Food_2013 – Food_2012** | **Construc._2013 – Construc._2012** | **Sustainable growth r._2013- Sustainable growth r.- 2012** |
| Z | -1.630[b] | -.336[a] | -2.012[a] | -2.276[a] |
| Asymp. Sig. (2-tailed) | 0.103 | 0.737 | .044 | .023 |
| a. Based on positive ranks. b. Based on negative ranks. c. Wilcoxon Signed Ranks Test | | | | |

*Source:* Representation by the authors based on SPSS

Results of Wilcoxon Signed Rank test for 2012 and 2013 showed there is statistically significant difference in the overall level of sustainable growth rates in the observed years ($z = -2.276$, sig = 0.023), but that there is no statistically significant difference in the level of sustainable growth rates of agricultural enterprises ($z = -1.630$, sig = 0.103) and food enterprises ($z = -0.336$, sig = 0.737), while there is statistically significant difference in construction enterprises ($z = -2.012$, sig = 0,044 ) in 2013 compared to 2012, thus hypothesis 4 is partially verified and partially rejected.

For the purposes of making a valid conclusion about the real growth potential of sampled agricultural, food and construction enterprises, the inflation rate is included in

the analysis as well. Results of testing hypotheses 5 and 6 are given in Table 11.

**Table 11.** Results One Sample T test for 2012 and 2013

| One-Sample Statistics | | | | |
|---|---|---|---|---|
| | N | Mean | Std. Deviation | Std. Error Mean |
| Sustainable growth r._2012 | 60 | 8.5112 | 10.60594 | 1.36922 |
| Sustainable growth r._2013 | 60 | 6.6125 | 8.17617 | 1.05554 |
| One-Sample Test | | | | |
| Test Value = 12.2 (2012.); Test Value = 2.2 (2013.); | | | | |
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| Sustainable growth r._2012 | -2.694 | 59 | .009 | -3.68883 | -6.4286 | -.9490 |
| Sustainable growth r._2013 | 4.180 | 59 | .000 | 4.41250 | 2.3004 | 6.5246 |

*Source:* Representation by the authors based on SPSS

It can be concluded that there is a statistically significant difference between the average sustained growth rate of sampled enterprises (Mean = 8.5112%, St.Dev = 10.60594) and inflation rate measured by the consumer price index in 2012 (12.2%). The hypothesis 5 is rejected and it can be considered that the average sustained growth rate of the company in 2012 is lower than the inflation rate measured by the consumer price index. Furthermore, given that the results of testing hypotheses 2 showed no statistically significant differences among the sustainable growth rate of agricultural, food and construction enterprises in 2012, it can be concluded that the average sustainable growth rates of enterprises from these sectors are lower than the inflation rate. Namely, as achieved t-value of -2.694 is less than the limited tabular value (t = 2.00), for 59 degrees of freedom and materiality threshold of $p = 0.05$, the hypothesis 5 is rejected and alternative hypothesis with error $p < 0.05$ and certainty P> 95% claiming that in the 2012 the average sustainable growth rate is lower than the inflation rate is accepted, that leads to the conclusion that in this year there was no considerable potential for growth of sampled enterprises.

The hypothesis 6 is also rejected as the average sustainable growth rate of enterprises (Mean = 6.6125%, St.Dev = 8.17617) in 2013 was statistically significantly different than the inflation rate measured by the consumer price index (2.2%). The results indicate that the average sustainable growth rate was significantly higher than the inflation rate. Based on the results of testing hypotheses 3 which indicated that there were no statistically significant differences among the sustainable growth rate of agricultural, food and construction enterprises in 2013 and hypotheses 6, it can be concluded that the average sustainable growth rates of enterprises in the agricultural, food and construction sectors are higher than the inflation rate. Namely, as achieved t-value of

4.180 is higher than the limited tabular value (t = 2.00), for 59 degrees of freedom and level signification of p = 0.05, the hypothesis 6 is rejected and alternative hypothesis with error p <0.05 and safety P> 95% claiming that in 2013 the average sustainable growth rate is higher than the inflation rate is accepted, that leads to the conclusion that in this year there was a considerable potential for growth in sampled food, agricultural and construction enterprises.

## Conclusion

Thanks to its geographical location, natural characteristics of the soil and favorable climatic conditions, agricultural production in Serbia has great potential for development. Therefore, it could be expected that enterprises from the agricultural sector as well as food enterprises have a high sustainable growth rate. This study showed that there is no statistically significant differences among the sustainable growth rate of agricultural, food and construction sectors in 2012 and 2013. Hence it can be concluded that Serbia does not sufficiently use all the competitive advantages it has in agriculture and food industry.

Research results show that there is no statistically significant difference in the level of sustainable growth rates of sampled enetrprises, but that there is statistically significant difference in the overall level of sustainable growth rates in 2013 compared to 2012. Research indicates that there is no statistically significant difference in the level of sustainable growth rates of agricultural and food enterprises in 2013 compared to 2012, which further indicates that in 2013 compared to 2012 there were no significant changes in the level of potential for the development of these sectors. In the control sector in this research, in construction sector enterprises, there is statistically significant difference in the level of sustainable growth rate in 2013 compared to 2012, ie. there was significant deterioration in the development potential of this sector. This points out to better vitality and greater development potential of the agricultural and food sectors.

Also, it was found that the average sustainnable growth rate of enterprises in 2012 was lower than the inflation rate measured by the consumer price index, so it can be concluded that in this year there was no real potential for growth of these enterprises. In 2013, there were no significant changes in the level of the average sustainable growth rate compared to the year 2012, but there was significant decline in the inflation rate comparing to the previous year. It can be concluded that for the real growth potential of agricultural and food enterprises as well as enterprises in other sectors, it is necessary to have macroeconomic price stability, which in some years may prevaile over the microeconomic indicators of particular business enterprises and branches.

The study results lead to the conclusion that under the assumption of agricultural and food enterprises growth at the level of sustainable growth rate, satisfactory real growth of named sectors is achieved only in cases of macroeconomic price stability and more extensive and diversified credit support. The research can serve as a basis for further research on this topic in the direction of the comparative analysis of particular

enterprises and particular branches of activity within the agricultural sector in order to determine those agricultural industries that in Serbia have the greatest development potential measured by the sustainable growth rate.

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# ODRŽIVA STOPA RASTA POLJOPRIVREDNIH I PREHRAMBENIH PREDUZEĆA U SRBIJI

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## Rezime

*Mnoga profitabilna preduzeća mogu otići u bankrotstvo ukoliko rastu presporo ili rastu prebrzo. Da bi se ocenilo da li neko preduzeće raste presporo ili prebrzo, potrebno je utvrditi njegovu održivu stopu rasta, koja predstavlja maksimalnu stopu rasta koje preduzeće može ostvariti bez dodatnog zaduživanja. Cilj ovog istraživanja je da se utvrdi održiva stopa rasta za preduzeća poljoprivrednog i prehrambenog sektora u Srbiji u 2012. i 2013. godini i da se utvrdi da li postoje razlike između ova dva međusobno povezana sektora. U istraživanje je uveden i građevinski sektor kao kontrolni sektor koji reprodukciono nije povezan sa poljoprivredom i prehranom. Takođe, cilj je da se utvrdi realna održiva stopa rasta posmatranih sektora u Srbiji uzimanjem u obzir stope inflacije koja u Srbiji ima vidljive oscilacije u posmatranim godinama. Realna održiva stopa rasta služi kao orijentir za donošenje zaključaka o razvojnom potencijalu ovih grana i zaključivanju koji su interni ili eksterni podsticaji potrebni za dalje povećanje održive stope rasta, odnosno potencijala za rast. Limitiranost obima rada je usmerila istraživanje na utvrđivanje održive stope rasta i međusobnu komparaciju posmatranih sektora i dala osnov za dalja istraživanja u pravcu komparativne analize unutar poljoprivrednog sektora i određivanja poljoprivrednih delatnosti sa najvećim razvojnim potencijalom izraženim kroz održivu stopu rasta.*

***Ključne reči:*** *održiva stopa rasta, poljoprivredni sektor, prehrambeni sektor, politika isplate dividendi*

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# A REVIEW INVESTIGATING AGRARIAN FEMALE ENTREPRENEURSHIP IN THE REPUBLIC OF SERBIA

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## Abstract

*Present research has found the link between economic development, gender equality and rural development of particular areas. Female agrarian entrepreneurship leaning on multifunctional agriculture and agribusiness, can create favorable work climate in the whole region. Comparative analysis of female agrarian entrepreneurship of some populated places in north and south of Serbia gives information that can help in creating independent regional developmental politics. Experiences, attitudes, suggestions and recommendations acquired from polled women entrepreneurs give valuable and hardly attainable data to the other women living in rural areas and planning on starting their own businesses.*

*Key words: female agrarian entrepreneurship, gender equality, agribusiness, village, economic development, rural development*

*JEL: M21, Q13.*

## Introduction

Entrepreneurship represents a proactive and innovative economic activity carried out by an individual or a group of individuals connected by a binding contract. The European Union (EU) gives a strong support to the idea of the agrarian entrepreneurship, especially to the agrarian entrepreneurship led by women. Supporting this concept provides sustainability of rural development as the second bearer of the agrarian politics.

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Women entrepreneurs have made substantial gains in terms of business education, corporate experience, and technical expertise. Women seek entrepreneurship for flexibility and autonomy, satisfaction and personal growth, and income and prestige (Winn, 2005; Winn, 2004). Too often, entrepreneurial efforts by women have gone unnoticed, and their contributions have been underappreciated usually because women's business ventures, particularly those in less developed countries, function more in the informal rather than formal economy (Datta et al., 2012).

In the Republic of Serbia, and especially in rural areas, women are not involved in rural agrarian activities. This is mainly due to the fact the dominant impact of tradition and the socio-economic outcome of gender differences are amplified by the educational structure, and differences in knowledge, skills and society's approach to education lead to an insufficient ability for the significant overcoming of gender differences. Many women are paid unofficially for their work – these types of payments are not recorded in officially gathered statistics. Also, some women who either want to work or wish to increase their hours are not officially registered as unemployed and therefore do not in appear as data in statistical analysis. This stands for women in general, but likely is more pronounced is rural areas through 'hidden' unemployment and seasonal work (Bock, 2010)

Some studies from the past decade clearly indicate a direct relationship between the level of gender equality that a society has reached and the level of sustainable economic and social development and long term prosperity (according to EU progress, 2015). Revitalizing the village economy is one of the basic demands for villages which have their rural status threatened either by becoming too large (and becoming a town), or by becoming engulfed in urban sprawl from a nearby town or city, or by annulling its own vitality (Čikić et al., 2011; Samardžija et al., 2005).

The key to starting the inner mechanism of development must be based upon gender sensitive research and analysis, which in turn are based on multiple statistical methods and gather data about entrepreneurship on the international level and Republic of Serbia.

## Methods, Goal and Purpose of the Research

The comparative analysis of female agrarian entrepreneurship of certain populated places in the North and the South of Serbia is based on the market research carried out by polling and questionnaires regarding the proportion of female agrarian entrepreneurship with special attention to agri-business, women in villages and rural development.

The questionnaire comprises of 5 parts: personal and family data of the woman entrepreneur, personal attitudes, data about the entrepreneur activities they have done so far, relationship with the environment, advice and suggestions to future women entrepreneurs. It was distributed in electronic form by email, personally on paper and/or by help of the society of women entrepreneurs.

The research was carried out between 2014 and 2015 with the goal of reaching a representative sample of questioned women divided between 75 participants from the

North and 75 participants from the South. The sample was comprised from the database of the agency of agrarian registry, the institute for gender quality of Vojvodina, the University of Kosovska Mitrovica, several societies of women entrepreneurs selected based on consultation with the Chamber of commerce and industry in Serbia, and Regional chambers of commerce.

The aim of this research is to learn about the profile of women entrepreneurs in rural areas through gathering and analyzing current empirical data alongside statistical data about socio-demographic features, ways of conducting business, and the gender based impact of the environment.

The purpose of this work is to detect basic motivators and obstacles for starting a business as a foundation for proactive action and strengthening female entrepreneurship through recommendations to amenable institutions to create specific measures.

Results of the research will serve generally as a confirmation or denial of the presented hypothesis; that there is an insufficient percent of female representation in agribusiness in rural areas, due to conflict relation between innovative spirit and patriarchic pattern of thinking and lack of communication with potential barriers of useful information.

The comparative analysis of female agrarian entrepreneurship from certain areas of the North and the South of Serbia will enable the observation of similarities and differences which can serve in further specification and creation of developmental politics in rural areas.

## Rural Development and Agribusiness

According to traditionally collected figures, rural areas in Serbia comprise 70% of the territory but just 43% of the total population (Cvijanović, 2012). Regional development is conditioned by the availability and quality of agrarian land, the level of infrastructure development, formal and informal institutions, organizations, societies, as well as demographic features of the population of a certain area, social capital and level of awareness about entrepreneurial activity.

In the last half century, the centralistic developmental concept of industrialization has been applied in Serbia which has led to a polarization in which socio-economic development has been saved for the city (urban areas) and left villages (rural areas) as the only dimension of life and work agriculture has left. (Pejanović et al., 2011).

The idea of agrarian entrepreneurship starting being supported more heavily during the 1990s in the European Union according to Pejanović, 2013, and in the last several years it has been recognized as a possible solution for unemployment in the Republic of Serbia. Agrarian entrepreneurship is based on new proactive European concepts of multifunctional agriculture as well as limited production on private agrarian land which consists of all the possibilities for economic actions by individuals within the rural economy (Njegovan, 2001).

Likewise, it is crucial to affirm the entrepreneurial approach to agribusiness because of

the prevalence of an oversimplified belief among agriculturists, tradesmen, scientists and experts. This belief is: if we have a market, we don't need any planning (Njegovan, 2002). Without a clearly specified plan about what to produce, how to produce it and whom for (which is founded on the law of offer and demand), the entrepreneurial way of business does not exist. Even if the state (Vlahović, 2013) influences an increase in the volume of agricultural producing through adequate measures of agricultural politics, which are in the function of satisfying the local market, it still fails to encompass the entrepreneurial spirit. It is not sustainable to produce random amounts of products and to produce them arbitrarily, without leaning on science, profession and certain groups of consumers (Đurašević, 2009).

Creating an operative and efficient commerce society or agricultural husbandry able to deliver demanded product implies being familiar with possible financing resources, and having marketing and management skills (modified according to Jones, 2004). Similarly (Van Praag et al., 2004) empirical results show that the level of education has the positive effect on quality of entrepreneurial execution (Kuper et al., 1994; Van Der Sluis et al., 2003; Van Der Sluiset et al., 2004). It is vital to position the role of local actors in creating and implementing measures for the realization of strategies for sustainable rural development, especially through the processes of popularization, introductions to relevant connections and entrepreneurial integration (Đekić, 2011).

The sustainability of rural development, according to the new concept, is not only represented by preserving the quality of natural resources and biodiversity, but also in saving social and cultural diversity as a foundation of planetary survival (Pejanović, 2013) through the aspects of continuous education, availability of useful information, development of entrepreneurial way of thinking and the active inclusion of the female population.

### Comparative analysis of the female agrarian entrepreneurship of certain populated places in the north and south of Serbia

The research sample (150) was comprised of two sub-samples: 75 women from the north (the Autonomous Province of Vojvodina) and 75 women from the south of Serbia (the Autonomous Province of Kosovo). All of the women from the sample are owners of agrarian husbandry, are engaged in some sort of entrepreneurial activity, and are the owners of an entrepreneurial store or are a part of the managerial structure of a firm.

In both sub-samples there was an equal portion of women falling under the age categories from 35 to 49 years and from 60 to 64 years old. Furthermore, some differences in percentages were noted in the age categories of 19 to 24 years, which contained more participants from the south, and also in the age group of 65+ which consisted only of participants from the south.

10 (13.33%) of the participants from the southern sub-sample have stated that their educational level is that of elementary school diploma or below, while there were no such cases noted in the northern sub-sample (0 (0%)) and there is a somewhat larger

number of women from the north who had finished high school. It is notable that there is almost the same portion in the both sub-samples that have higher and high education levels (north 31 (41.33%), south 33 (44%)). Therefore, the conclusion can be drawn that the level of education is a strong positive relationship with the creation of a profitable business idea, entrepreneurial activity and the emancipation of women.

Additional knowledge and/or skills are noted among both subgroups of women, but there are some differences to their extent and direction. Data analysis shows that women from the south are somewhat more familiar with traditional skills which implie modern application of craft and technical knowledge through art and through implementation in distinctive product design.

Taking the sample as a whole, most of the participants live in a household which has three or four family members (north 44 (58. 6%), south 31 (41.33%), meaning that the structure of the household is mainly consisting of married couples with one or more underage children (north 23 - 30,67%, south 25 - 3.33%). Furthermore, a large portion of the sample consists of expanded families (north 15 (20. 00%), south 17 (22. 67%)).

With regard to decisions made in respect of the distribution of the family budget, women entrepreneurs tend to make it jointly with their family members (north 46 (61. 33%), south 42 (56%)) or on their own (north 21 (28%), south 21 (28%)). Notably, in the southern sub-sample 12 (16%) women said that their husband, partner or a family member is making money-related decisions, while in the northern sub-sample only 3 (4%) women handed these decisions to someone else.

**Table 1.** Ways of doing house chores and taking care of other family members

| Type of choirs | Participant North | Participant South | Other woman in the household-maid North | Other woman in the household-maid South | Husband/Partner North | Husband/Partner South | Together with husband/partner North | Together with husband/partner South |
|---|---|---|---|---|---|---|---|---|
| Cooking | 54 (72%) | 57 (76%) | 10 (13%) | 7 (9%) | 2 (3%) | 6 (8%) | 15 (20%) | 5 (7%) |
| Dish washing | 50 (67%) | 47 (63%) | 10 (13%) | 9 (12%) | 0 (0%) | 5 (7%) | 13 (17%) | 14 (19%) |
| Laundry washing | 59 (79%) | 56 (75%) | 8 (11%) | 8 (11%) | 1 (1%) | 2 (3%) | 7 (9, %) | 9 (12%) |
| Ironing | 60 (80%) | 52 (69%) | 9 (12%) | 5 (7%) | 1 (1%) | 3 (4%) | 5 (7%) | 15 (20%) |
| Cleaning | 47 (63%) | 50 (67%) | 9 (12%) | 7 (9%) | 0 (0%) | 2 (3%) | 21 (28%) | 11 (15%) |
| *Participants living in families with children, expanded family or with relatives:* | | | | | | | | |
| Taking care of small kids (0-6 y.) | 7 (9%) | 9 (12%) | 0 (0%) | 0 (0%) | 7 (9%) | 1 (1%) | 15 (20%) | 3 (4%) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Taking care of school duties | 15 (20%) | 15 (20%) | 0 (0%) | 0 (0%) | 1 (1%) | 3 (4%) | 10 (13%) | 7 (9%) |
| Taking care of elderly | 12 (16%) | 6 (8%) | 0 (0%) | 0 (0%) | 2 (3%) | 1 (1%) | 15 (20%) | 6 (8 %) |

*Source: Authors‚ calculation based on the survey data*

The results presented in the Table 1 show that the women from the sample do the household chores mostly on their own, although a husband or partner may help with cooking and cleaning in the northern sub-sample, while husbands and partners from the southern sub-sample help more with the ironing. There is a subtly smaller participation of husbands/partners in taking care of small children and elderly in the southern subgroup.

**Table 2.** Degree of agreement of the participants with the following statements

| Statements | I disagree | | I partially agree | | I agree | |
|---|---|---|---|---|---|---|
| | North | South | North | South | North | South |
| If only one of the spouses is working, it is more natural for it to be the man | 27 (36.00%) | 27 (36.00%) | 29 (38.67%) | 29 (38.67%) | 28 (37.33%) | 18 (24.00%) |
| The nature of household chores is more suitable for women. | 28 (37.33%) | 26 (34.67%) | 38 (37.33%) | 16 (21.33%) | 19 (25.33%) | 33 (44.00%) |
| Marriage equality is very good, but it is usually better that the male spouse has the last say. | 55 (73.33%) | 34 (45.33%) | 9 (12.00%) | 20 (26.67%) | 9 (12.00%) | 20 (26.67%) |
| Employment of a female spouse takes a big toll on the family life. | 58 (77.33%) | 29 (38.67%) | 9 (12.00%) | 22 (29.33%) | 8 (10.67%) | 23 (30.67%) |
| Being a housewife can be equally fulfilling for a women, just as being employed can. | 37 (44.33%) | 23 (30.67%) | 21 828.00%) | 21 (28.00%) | 16 (21.33%) | 31 (41.33%) |
| Family needs are more important than a woman's personal ambition | 25 (33.33%) | 25 (33.33%) | 24 (32.00%) | 24 (32.00%) | 25 (33.33%) | 26 (34.67%) |
| Equality in marriage is good, but it is better if a male spouse earns more. | 34 (45.33%) | 28 (37.33%) | 16 (21.33%) | 22 (29.33%) | 21 (28.00%) | 23 (30.67%) |

*Source: Authors‚ calculation based on the survey data*

The results shown in Table 2 reveal that the women entrepreneurs from the total sample only partially support the statement:„If only one of the spouses is working, it is more natural for it to be the man". Participants from the north mainly disagree (73.33%) with the statement „Marriage equality is very good, but it is usually better that the male spouse has the last say" and with „Employment of a female spouse takes a big toll on the family life". A comment coming from one of the women entrepreneur participants from the south part of Serbia goes in favor of women emancipation, in spite of the divided attitudes toward traditionalism (shown equally in both sub-samples). Her comment was aimed at the statement „Family needs are more important than a woman's personal ambition" and it was „I absolutely don't accept this attitude!"

**Table 3.** Support for the women entrepreneurs when they need advice or help

| Situations in which advice or some form of help is needed | Sample | Family | Friends | Business associates | Acquaintances outside of work | No one/ Doesn't have anyone | No one/ Doesn't need anyone | Institution or organization |
|---|---|---|---|---|---|---|---|---|
| Gaining information regarding business opportunities | N | 30 (40%) | 25 (33%) | 26 (35%) | 9 (12%) | 2 (3%) | 1 (1%) | 9 (12%) |
| | S | 41 (55%) | 12 (16%) | 31 (41%) | 15 (20%) | 2 (3%) | 1 (1%) | 1 (1%) |
| Finding an employee of certain qualifications | N | 18 (24%) | 34 (45%) | 15 (20%) | 10 (13%) | 3 (4%) | 5 (7%) | 8 (11%) |
| | S | 32 (43%) | 28 (37%) | 22 (29%) | 8 (11%) | 2 (3%) | 1 (1%) | 0 (0%) |
| Advice or support in times of business crisis | N | 44 (59%) | 25 (33%) | 15 (21%) | 1 (1%) | 2 (3%) | 2 (3%) | 3 (4%) |
| | S | 50 (67%) | 17 (23%) | 20 (27%) | 8 (11%) | 2 (3%) | 1 (1%) | 0 (0%) |
| Help concerning paperwork on the job | N | 15 (21%) | 12 (16%) | 37 (49%) | 4 (5%) | 1 (1%) | 4 (5%) | 0 (0%) |
| | S | 36 (48%) | 17 (23%) | 33 (44%) | 4 (5%) | 1 (1%) | 2 (3%) | 0 (0%) |
| Finding a replacement when ill | N | 43 (57%) | 18 (24%) | 17 (23%) | 1 (1%) | 2 (3%) | 1 (1%) | 3 (4%) |
| | S | 49 (65%) | 16 (21%) | 17 (23%) | 5 (7%) | 1 (1%) | 2 (2 %) | 0 (0%) |
| Urgent money loan | N | 38 (51%) | 22 (29%) | 7 (9%) | 6 (8%) | 3 (4%) | 5 (7%) | 2 (3%) |
| | S | 51 (68%) | 12 (16%) | 23 (31%) | 1 (1%) | 0 (0%) | 11 (15%) | 2 (3%) |

*Source: Authors' calculation based on the survey data*

When it comes to asking for support in situations where some kind of information is needed, finding a replacement when they ill, an urgent money loan and similar, from Table 3 it is noticeable that women entrepreneurs from both parts of Serbia are relying on their family, friends and business associates. Observable is also a poor level of communication with institutions or organizations such as offices for local economic development, the department for commerce in local self-government, National Employment Service, loan institutions, women entrepreneur societies and similar institutions.

Before founding an entrepreneurial store/firm or a registration of agrarian husbandry, entrepreneurs from the northern part of Serbia were more likely to be officially employed or were actively seeking employment while the entrepreneurs from the southern part were mostly unofficially self-employed and already had a firm/husbandry whose activities were shut down (north 3 (4%), south 9 (12%)).

It is estimated that businesses started with entrepreneurial ideas provide 75% of new working places in the commerce every year. The main motivators for opening their own businesses for women from this sample were independence, good ideas or opportunities, increased earnings, family traditions, coordinating career and family duties, converting hobbies into work etc. Entrepreneurs from the populated places in the north were driven by unemployment or by doing jobs that are directly related to their profession, but the women from the south of Serbia were motivated by too much free time that they hand on their hands after raising their children. In close or extended families, the entrepreneur was usually the father of these women entrepreneurs (north 13 (16%), south 24 (32%)).

The business climate in Serbia - as far as availability of the financial capital is concerned, complexity of the administrative procedures and possibilities of getting a second chance for starting agribusiness and business in general – was rated by the women in the total sample, with the women from the north rating it between1-2, while the women from the south rated 2-3 (the range of marks goes from 1 to 5, where one is the lowest and 5 is the highest score). Entrepreneurs from the whole sample rated the risk of failing at 2.46, which in some way is not consistent with the previous answers, and thus indicates either a lack of attention when answering or insufficient knowledge regarding business opportunities.

Before these entrepreneurs started their own businesses, they had attended specific courses in order to prepare them for their future ventures. Women from the south attended mostly courses for entrepreneurial development, craft courses and courses for services, while the women from the north took courses for entrepreneurial development, courses for enhancing their knowledge in bookkeeping, accountancy, managing paperwork, learning more about law procedures and laws, as well as courses which developed their communication, marketing and managerial skills.

**Graph 1.** Useful business connections during the business setup
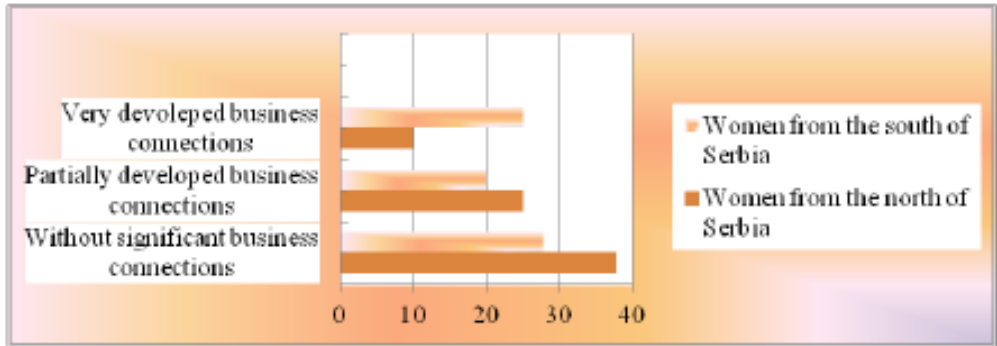


*Source: Authors' calculation based on the survey data*

When these women were starting their own businesses, they all had different business experiences (Graph 1) which contributed to the creation of useful work connections (social resources), as stated by 35 (46.67%) women from populated places in the north and 45 (60%) women from the sample from the populated southern parts of Serbia. Only 19 (25.33%) participants from the north had previous managerial experience, and 34 (45.33%) from the south. This proves that for starting your own business, prior top managerial experience is not essential, but continuous education, strengthening of the communication skills, developing business and social contacts with professional help are vital. Because of this, in the last 30 years there has been a dramatic increase for market and concurrent information and the smart synthesis of this information. Services like these, together with institutions specialized in providing them, are offered by management consultants (Cvijanović et al., 2010)

There is a significant difference in the business approach among female entrepreneurs from questioned sub-samples; the entrepreneurs from the south are under a stronger influence from family tradition regarding entrepreneurship, entrepreneurial and managerial experience and they usually seek professional advice and loans when it comes to starting their own business (north 8 (10.67%), south 26 (75%)). The conclusions that can be drawn from the entrepreneurial experience are as well as macroeconomic stability – the first factor that has an influence on the success of the form – there is also an impact of the innovation in the firm it self. Alongside consulting services, innovation with business strategies and finances is crucial. According to research carried out by Mihailović (2011), these two factors describe more than 50% of the variance in the performance quality of the agri-complexes in Serbia.

Women entrepreneurs from the populated places in the north of Serbia are involved in trade (26-34.67%) , classical services (17-22,67%), agrarian business (12-16%) and information technologies, finances, real-estate and scientific and technological development (8-10.67%) and catering industry (7-9.33%), while in the south (24-32%) the population is engaged in agrarian activities, trade (17-22.67%), administrative and social services (10-13.33%), catering industry (7-9.33%), classical services (6-8.00%)

and entrepreneurial activities in traffic (6-8.00%).

The participants firms or agrarian husbandry from the both subgroups are mostly carrying out business on the local market (north 50 (66.67%), south 48 (64%)). There are only 3 firms (4% of the sample) from the northern sub-sample trading on the European Union market.

Turnover in most of the firms/agrarian husbandries in the past year was approximately the same 2-4 million dinars (RSD) (north 66 (88.00%), south (81.33%). Participants largely either stated that the turnover had decreased compared to last year due to financial crises (north 41 (54.67%)) or stated that it stayed the same (south 43 (57.33%)) (Picture 1).

**Picture 1.** Changes in earnings in firms/agrarian husbandries compared to last years
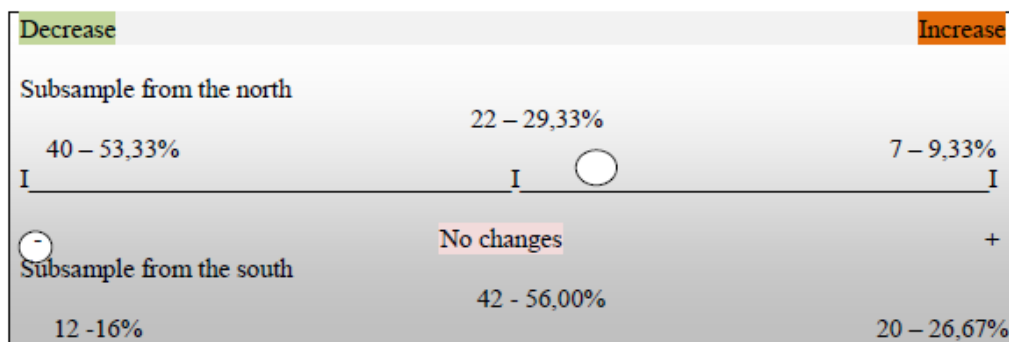


*Source: Authors, calculation based on the survey data*

Gains by the firms/agrarian husbandry in the past year was small/sufficient and good compared to previous periods in the both sub-samples (north 60 (80.00%), south 52 (66.33%)), which is partially confirmed by answers on the control question regarding intensity of change of the gain: decreased (north 24 (32.00%), south 19 (25.33%)), no changes (north 25 (33.33%), south 23 (30.67%)) and increased (north 9 (12%), south 24 (32%)).

Discrepancy in the answers regarding the assessment of the last year's turnover compared to past periods between women from the south and the north is so small it can be disregarded. One of the reasons for that is the fact that only descriptive measures were included in the questionnaire. Nevertheless, women entrepreneurs have rated their businesses as stagnant (north 33 (44%), south 19 (25.33%)), and successful (north 23 (30.67%), and south 43 (57.33%)).

The basic elements of entrepreneurship are innovations which encompass: implementing new organizational structure, implementing new technology, discovering new energy resources, introducing new products, introducing new work methods and similar (Pejanović, 2010). 31 (41.33%) Entrepreneurs from the north of Serbia have been introducing innovations of products and services for the past two years, while 19 (25.33%) said they introduced stronger marketing support for other areas of their business. On the other hand, entrepreneurs from the south have innovated the inner

organization of the firm, 24 (32.00%), product and service innovation, 23 (30.67%), and innovations in marketing, 21 (28%).

As far as income increases in the next two years are concerned, women from both subgroups stated that they are planning to hire additional workers, and invest in new products, services and marketing. Women from the north declared the intention of increasing their employees' salaries (north 15 (20%), south 5 (6.67%), and a higher portion of women from the south stated they plan on keeping most of the gain (north 6 (8%), south 12 (16%), which is not in accordance with previous answers, nor the experience and entrepreneurial tradition of women from the south.

**Table 4.** Intensity of engagement of the entrepreneurial women in other organizations and societies

| Intensity of engagement ----------------------- Type of association | Active | | Passive | | Not a member | |
|---|---|---|---|---|---|---|
| | North | South | North | South | North | South |
| Employers' association | 9 (12%) | 25 (33%) | 11 (15%) | 20 (27%) | 50 (67%) | 30 (40%) |
| Association of the peopleof same profession | 17 (23%) | 15 (20%) | 15 (20%) | 34 (45%) | 39 (52%) | 25 (33%) |
| Sports/recreation society | 7 (9%) | 20 (27%) | 14 (19%) | 24 32%) | 49 (65%) | 29 (39%) |
| Art/education society | 16 (21%) | 13 (17%) | 14 (19%) | 19 (25%) | 40 (53%) | 41 (55%) |
| Humanitarian organization | 6 (8%) | 16 (21%) | 10 (13%) | 17 (23%) | 27 (36%) | 37 (49%) |

*Source: Authors calculation based on the survey data*

Generally speaking, entrepreneurs from both subgroups do not show high levels of engagement with any of these organizations, from employers' associations to humanitarian organizations. There is a certain deviation in the southern subgroup (see Table 4), which is understandable considering the fact that there is specific entrepreneurial family tradition, which has offered stronger communications through connecting via organizations.

**Table 5:** Intensity of the possible problematic situations

| Intensity of the problem<br><br>Type of problem | Sample | Never | Occasionally | Rarely | Often | Can't asses |
|---|---|---|---|---|---|---|
| To come home from work, too exhausted to do house chores. | North | 4<br>(5%) | 12<br>(16%) | 25<br>(33%) | 26<br>(35%) | 3<br>(4%) |
| | South | 21<br>(28%) | 25<br>(33%) | 4<br>(5%) | 21<br>(28%) | 4<br>(5%9 |
| Conflict of the time spent on the work and time spent in home-family duties. | North | 8<br>(11%) | 16<br>(21%) | 26<br>(35%) | 20<br>(27%) | 8<br>(11%) |
| | South | 17<br>(23%) | 21<br>(28%) | 15<br>(2%) | 22<br>(29%) | 0<br>(0%) |
| Poor concentration during family activities | North | 11<br>(15%) | 20<br>(27%) | 22<br>(29%) | 14<br>(19%) | 1<br>(1%) |
| | South | 11<br>(15%) | 29<br>(39%) | 19<br>(25%) | 16<br>(21%) | 0<br>(0%) |
| Come to work and feel too tired to do work tasks. | North | 14<br>(19%) | 14<br>(19%) | 31<br>(41%) | 9<br>(12%) | 3<br>(4%) |
| | South | 28<br>(37%) | 15<br>(20%) | 15<br>(20%) | 16<br>(21%) | 1<br>(1%) |
| Conflict of the time spent on the work and time spent in home-work duties. | North | 13<br>(17%) | 16<br>(21%) | 23<br>(31%) | 17<br>(23%) | 3<br>(4%) |
| | South | 14<br>(19%) | 17<br>(23%) | 21<br>(28%) | 18<br>(24%) | 5<br>(7%) |
| Poor concentration at work due to family duties. | North | 18<br>(24%) | 20<br>(26%) | 26<br>(35%) | 5<br>(7%) | 2<br>(3%) |
| | South | 22<br>(29%) | 17<br>(23%) | 16<br>(21%) | 19<br>(25%) | 2<br>(3%) |
| Conflict situations with distributors, colleagues, customers or other stakeholders. | North | 21<br>(28%) | 27<br>(36%) | 18<br>(24%) | 2<br>(3%) | 3<br>(4%) |
| | South | 24<br>(32%) | 20<br>(27%) | 17<br>(23%) | 14<br>(19%) | 0<br>(0%) |

| Intensity of the problem<br><br>_Type of problem_ | Sample | Never | Occasionally | Rarely | Often | Can't asses |
|---|---|---|---|---|---|---|
| _If there are conflicts:_ Are they based on gender discrimination? | North | 41<br><br>(55%) | 9<br><br>(12%) | 7<br><br>(9%) | 2<br><br>(3%9 | 12<br><br>(16, %) |
| | South | 37<br><br>(49%) | 13<br><br>(17%) | 9<br><br>(12%) | 16<br><br>(21%) | 0<br><br>(0%) |
| Conflict situations with the environment, tenants in the neighborhood of the business offices and similar. | North | 34<br><br>(45%) | 16<br><br>(21, %) | 14<br><br>(19%) | 2<br><br>(3%) | 4<br><br>(5%) |
| | South | 32<br><br>(43%) | 15<br><br>(23%) | 11<br><br>(15%) | 13<br><br>(17%) | 13<br><br>(17%) |
| _If there are conflicts:_ Are they based on gender discrimination? | North | 44<br><br>(9%) | 9<br><br>(12%) | 4<br><br>(5%) | 4<br><br>(5%) | 7<br><br>(9%) |
| | South | 35<br><br>(47%) | 18<br><br>(24%) | 5<br><br>(7%) | 13<br><br>(17%) | 3<br><br>(4%) |

_Source: Authors, calculation based on the survey data_

More women from the northern subgroup had come home from work too tired to do house chores compared to women from the south. There is a registered conflict between time spent on work and time spent at home doing family duties, with both groups of women saying they have bad concentration when it comes to doing family activities due to overwhelming business duties (Table 5).

Even though the women from the southern subgroup exhibit less tiredness on work due to household activities than the women from the north, they still show better focus during work hours despite family activities. However they do still feel the equal conflict of the time spent home and time spent on work.

Conflicts with distributors, colleagues, consumers, and the environment near the business's offices have low visibility in both of the subgroups, but the southern sub-sample stated that, even if some sort of conflict occurs in the office neighborhood, it is usually based on gender discrimination.

In terms of advice for prospective women entrepreneurs, women entrepreneurs from the north have the following messages: engage in continuous education; rely on your intuition, but also on the professional assistance of institutions, friends and family; listen to other peoples' experiences; become a part of societies related to your profession; visit all sorts of events, forums, etc. Synergy and useful information are the key to leading a successful business. The conclusion can be drawn (Keh, 2006) that acquiring and applying information isn't a one time event, but an ongoing process through everyday

interaction with customers, distributors and other business associates.

Furthermore, it is very important to make a balance between risky and cautious ways of leading a business. The risk taking dimension is positively related to high performances of entrepreneurial firms (Naldi, 2007), but the successfulness of the entrepreneurial process (Pejanović, 2010) is also subject to other crucial factors such as: entrepreneurial opportunities (the presence of favorable market options and good perception of the business possibilities); and entrepreneurial capacity (which enables starting new jobs that are satisfying the market opportunities and which primarily brings the motivation to enter the world of entrepreneurship and having adequate knowledge and skills needed to actualize a business opportunity).

## Conclusion

Entrepreneurship represents "creative destruction"; that is, the application of continuous innovations and constant market monitoring. Female entrepreneurship enables a strengthening of gender equality, which is one of the indicators of the economic development of a modern society. Tradition and the patriarchic way of upbringing remains an obstacle, but as shown by market research it can also provide a form of support in some areas.

The hypothesis in this research poses that female entrepreneurship in rural areas is not broadly represented, and it has been confirmed by establishing personal contact with some of the women entrepreneurs, societies and associations. There is not an all encompassing database available, aside from the gender non-sensitive data provided by the Agency for Commerce Registries which consists only of previously collected contacts of entrepreneurs. The research was done in several stages, until the sample of 75 participants from north and 75 participants from south of Serbia was reached.

By employing comparative analysis, the profile of the entrepreneurs was compiled including their family and business environment, personal attitudes and business issues in both subgroups of the sample. Also, a number of key motivators and obstacles for opening a business were revealed by authentic replies given in the survey. The questions were asking what they change generally or in their surrounding, in order to enhance the number of women entrepreneurs in villages.

<u>These are the answers of the women from the northern part of Serbia:</u> "The number of female entrepreneurs could be enhanced by raising the level of awareness regarding the importance of the entrepreneurial way of thinking via specialized education, trainings, courses, forums, entrepreneurial exhibits and fairs, examining visits of the environments in Serbia and abroad which have developed entrepreneurial traditions; establishing more services for taking care of children and helping families (accommodated services such as: kindergartens with flexible working hours, day cares for elderly…); by founding societies and creating a network between available services via modern ways of communication; stronger media support; by eliminating "obstacles" posed by society and government, removing all the taxes apart from the tax on added value

and other non-fiscal deals; simplification of administrative measures; by giving more financial incentives such as creating funds for female entrepreneurs starting their own business, starting at the local level; changing business climate and providing stronger levels of state support; increasing positive discrimination of women; and incorporating entrepreneurial education in elementary schools", since 58% of young people claimed they don't have any intention of starting their own businesses in the next 5 years (Citizens' initiatives, 2012).

Answers coming from the women from the south of Serbia: "The number of female entrepreneurs would be significantly higher if a program for empowering female entrepreneurship was developed; by entrepreneurial education and education in every sense; raising collective awareness regarding gender equality, increasing support from families and the environment; influencing collective awareness of women-encouraging proactivity; better and clearer communication and information flow; establishing associations; stronger support from the government; changing the conditions of business and women's' position in the society in general; founding trust funds, starting at the local level; building missing infrastructure in populated areas; changing certain laws, especially ones regarding product import and export; facilitate product placing on regional, EU, and world markets; introducing series of benefits and changing work climate; and the adaptation of certain laws and regulations."

From the above stated recommendations (which are already partially applied in some rural areas), the strongest attitude is that entrepreneurship is in fact a profession and that it needs to be studied early in life, in elementary schools even. It is necessary to create a compulsory national networked system of business communication and correspondence for women entrepreneurs with the inclusion of consulting favors. With the help of associations, societies and informal pressure groups, coercion should be applied to present the issues facing female entrepreneurs to the appropriate adequate institutions, initially focusing on regional differences in order to change specific administrative measures, soften legal restrictions and create rural policies in politics relating to specific areas which can help women entrepreneurs.

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# PREGLED ISTRAŽIVANJA ŽENSKOG AGRARNOG PREDUZETNIŠTVA U REPUBLICI SRBIJI

*Maksimović Goran[5], Otović Slavica[6], Demirović Dunja[7], Tatjana Vermezović [8]*

## Rezime

*Rezultati dosadašnjih istraživanja govore da postoji veza između ekonomskog razvoja, rodne ravnopravnosti i ruralnog razvoja pojedinih područja. Žensko agrarno preduzetništvo oslonjeno na multifunkcionalnu poljoprivredu i agrobiznis može stvoriti povoljnu poslovnu klimu u celom regionu. Uporednom analizom ženskog agrarnog preduzetništva nekih naseljenih mesta sa severa i juga Srbije dobijaju se podaci koji mogu pomoći u kreiranju pojedinačnih, regionalnih razvojnih politika. Iskustvo, stavovi, sugestije i preporuke od strane anketiranih preduzetnica pružaju retko dostupne informacije ženama na selu koje razmišljaju o pokretanju sopstvenog biznisa.*

***Ključne reči:*** *žensko agrarnopreduzetništvo, rodna ravnopravnost, agrobiznis, selo, ekonomski razvoj, ruralni razvoj*

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# ECONOMETRIC ANALYSIS OF EXCHANGE RATE IN SERBIA AND ITS INFLUENCE ON AGRICULTURAL SECTOR

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## Summary

*This paper attempts to empirically estimate equilibrium exchange rate level of Serbian dinar. In that purpose reduced form equilibrium real exchange rate approach (ERER) is used, developed by IMF's Consultative Group on Exchange Rate Issues (CGER).*

*The research was made by using ARDL approach in the single-country analysis. It has been started from dynamic model which has described relation between real effective exchange rate and a set of fundamental variables. Bound test has been provided due to determination of the long-term relationship existence between variables. F-statistics has been used for long-term relationship testing between dependent variable and set of indicators. Since assumptions were met, least squares method was used for coefficient estimation. The results have shown constant dinar's overvaluation over medium term.*

***Key words:*** *ARDL, assessment, equilibrium real exchange rate, ERER, Serbia*

***JEL:*** *C33, F31, F41, O24, Q10*

## Introduction

IMF's Consultative Group on Exchange Rate Issues (CGER) has been working on exchange rate estimations for 20 years, as it has always been a current issue, especially in recent decades, in period of globalization and trade and financial integration of the world economy. Their activities were first focused on advanced countries, and in the 21st century have expanded on developing economies, as well.

CGER approach consists of three complementary methodologies: the method of

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macroeconomic balance (MB), the method of external sustainability (ES) and the method of reduced equations of the equilibrium real exchange rate (ERER).

The prolonged and significant real exchange rate deviation from the equilibrium level (specifically, in terms of overvaluation can lead to a deterioration of the current account and trade balance, speculation, foreign debt increasing, investment decline, productivity and overall economic growth decreasing.(Pazun et al., 2014)

As the equilibrium exchange rate level cannot be directly monitored, there are different methodologies for assessing equilibrium exchange rate and, depending on model, these concepts often yield conflicting results (Bussiere et al., 2010). Particularly, there has been challenge in emerging countries and developing economies, such as Serbia, with structural problems, data unavailability, and high macroeconomic volatility. (Pazun et al., 2014)

Therefore, the aim of this paper is to empirically estimate equilibrium exchange rate level of Serbian dinar. For this purpose reduced form of equilibrium real exchange rate (ERER) approach is used. This empirical concept has root in the behavioral equilibrium exchange rate (BEER) concept introduced by Clark and MacDonald (1998). The BEER concept involves direct econometric estimation of the real effective exchange rate (REER) equation as a function of the set of fundamental determinants without referring to internal and/or external equilibrium of the economy.

This analysis first creates reduced relation between a dependent variable, which is real effective exchange rate, and a set of fundamental variables. Based on econometric estimation of coefficients, equilibrium exchange rate is calculated. The last step consists of calculation the difference between current real effective exchange rate and the estimated equilibrium level. Compare to similar studies by IMF and/or national central banks, this individual research will provide the latest empirical evidence in case of Serbia.

The results of this paper point to overvaluation of Serbian real exchange rate over medium term.

The paper is organized as follows: Section II provides an overview of the relevant literature and conducted research related to the subject. Section III describes data and model used in order to deliver, as in section IV presented, empirical results of the exchange rate assessment and discussion. Section V describes the state of agricultural sector in Serbia. We conclude with the main findings, limitations and possible further research.

## Literature review

Studies which belong to post Bretton Woods period mostly focus on predicting real exchange rate oscillating in the medium and long term, as well as on searching and influence of fundamental variables that provide the equilibrium exchange rate assessment.

In the study of Driver and Westaway (2004) overview of 14 different concepts for assessing the equilibrium exchange rate has been provided, thereby suggesting that different approaches suit different time periods.

Rajan and Siregar (2006) in their work provide an analytical overview of few models and explore two interrelated questions:

1. which fundamentals are used in estimating the equilibrium real exchange rate – ERER? and

2. what are the main differences between models?

In Siregar's research (Siregar, 2011) comparative analysis of few concepts has been provided, both with their theoretical framework and empirical results.

Research corresponding to the specific exchange rate assessment methodology implementation in developing countries can be found in work of Hinkle and Montiel (1999). Particularly, Egert, Halpern and MacDonald (2006) have provided research on the equilibrium exchange rate in the countries of Central and Eastern Europe, South-Eastern Europe, as well as ex-Soviet Union, and final conclusion of their study is there was no precise assessment because of model uncertainty, as well as the fundamentals (Egert et al., 2006)

Lee et al. (2008) explains three complementary methodologies for equilibrium exchange rate assessment, developed by International Monetary Fund consultative group on exchange rate issues (IMF CGER). These are: the macroeconomic balance (MB) approach, the reduced-form equilibrium real exchange rate (ERER) approach and the external sustainability (ES) approach. For the first time, extended versions of these methodologies are studied, covering not only advanced countries, as in the past, but also emerging market countries. Dynamic ordinary least squares (DOLS) methodology was undertaken on sample of 48 countries over 1980–2004 (six countries were excluded due to lack of data).

More detailed description and model setup can be found in work of Ricci, Milesi-Ferretti, and Lee (2008), where DOLS methodology was applied on panel with fixed country effects.

Similarly, in work of Bussiere et al. (2010) the time dimension covers period 1980-2007 with balanced panel of 44 economies, in case of annual data (Bussiere et al., 2010). At the quarterly frequency, data constraints are much more serious and sample consists of 14 economies (excluding from the NFA fundamentals). Authors provide both panel and single-country estimations.

In another analysis, so-called single-country assessment of the equilibrium exchange rate, Bussière et al. (2010) used ARDL concept (Autoregressive Distributed Lag Approach), which has the advantage over traditional Johansen procedure and a error correction model, and that is not necessary to provide unit root tests for each variable, where the results can be unreliable in the case of a short series and structural breaks.

Further, few research papers follow work of Bussiere et al. (2010), Lee et al. (2008), as well as the case of Latvia (Ajevskis et al., 2012). In this study, quarterly data covering the period from the first quarter of 2001 to the fourth quarter of 2010, were used. In estimation of Armenia (Weber, Yang, 2011) there have been provided both country specific single

country equation for the ERER approach and cointegrated panel estimation techniques proposed by Pesaran (2006).

Existing literature points that there is difficulty of evaluation exchange rate deviation especially in case of transition economies, which have not still passed through structural reforms and with high uncertainty and macroeconomic volatility, as well as short time series.

### Data description and the research model

In order to evaluate the misalignment level of real exchange rate needed to shift country economy to its equilibrium state (more precisely, around equilibrium path), ERER concept was performed.

The ERER approach involves the following three steps (IMF, 2006 and Lee et al., 2008):

1. a reduced-form relationship between the real exchange rate and a set of fundamentals is estimated,

2. the equilibrium real exchange rate is calculated using the coefficients obtained from the econometric relationship,

3. and, in the third step, the range of the exchange rate adjustment, in which would be re-attained equilibrium level, is calculated directly as the difference between the actual real exchange rate and the equilibrium value identified (estimated) in the second step.

As Serbia is out-of-sample in IMF panel estimations, we use single-country (time series) estimation in this paper.

This study used data for the period from 2002 to 2014. The selection period is conditioned by the absence of some of the variables for the previous years, on the one hand, since the beginning of Serbia's transition period is linked to the year 2001 (or 1999[4]), and, on the other hand, the relative methodology compliance for calculating variables values in the recent past. Furthermore, the weights are calculated due to countries, the leading trade partners which participate in over 60% of the total trade with Serbia. In this way values of most variables are obtained (variable relative to trading partners).

Numerous economic sources have tried to identify the variables that influence medium and long term equilibrium determination.

Following works of Lee et al. (2008), Bussière and associates (2010), as well as work of Weber and Yang (2011), next indicators are found in the model: net foreign assets (NFA), fiscal balance relative to trading partners (fb), terms of trade (tt), total government consumption relative to trading partners (gg), openness to trade (op), total investments relative to trading partners (tt), real per capita GDP (gdpO). Most of indicators is the natural logarithm.

The data used for model estimation come from various sources, which can be seen in the table A1 in Appendix.

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4    According to IMF, transition period in Serbia starts in 1999

The model used in this paper is dynamic model presenting real effective exchange rate in natural logarithm (lr) as dependent variable, and $\{x_{s,t}\}_{s=1}^{K}$ fundamental variable set, as followed:

**MODEL**

$$\Delta lr_t = \alpha\, lr_{t-1} + \beta_1\, \Delta nfa + \beta_2\, \Delta fb + \beta_3\, \Delta lgdpo + \beta_4\, \Delta logop + \beta_5\, nfa_{t-1} + \beta_6\, fb_{t-1} + \beta_7\, lgdpo_{t-1} + c + \varepsilon_t$$

### Empirical results and discussion

In the case of this study, as the time series is short, and large number of parameters exist, the analysis was performed with several models, and each used a smaller number of indicators. Although the software automatically selects the optimal structure according to specified information criterion, and provides an estimate of the number of lags for the appropriate sample, given the small number of observations, only one delay specifically in this case could have been accepted.

In order to determine the existence of long-term relationships between the fundamentals, the bound test developed by Pesaran, Shin and Smith (2001) has been provided. F statistics is used in order to test long-term relations between the real effective exchange rate and its fundamentals. As long as the value of F-test is beyond these limits, it can be concluded that there is a long-term relationship between the independent variables and the dependent, without information on the integration degree of reggresors.

**Table 1.** Bound test

| Wald Test: | | | |
|---|---|---|---|
| Equation: Untitled | | | |
| | | | |
| Test Statistic | Value | df | Probability |
| | | | |
| F-statistic | 40.29070 | (4, 1) | 0.1175 |
| Chi-square | 161.1628 | 4 | 0.0000 |
| | | | |
| Null Hypothesis: C(7)=C(8)=C(9)=C(10)=0 | | | |
| Null Hypothesis Summary: | | | |
| | | | |
| Normalized Restriction (= 0) | | Value | Std. Err. |
| | | | |
| C(7) | | -1.194512 | 0.148777 |
| C(8) | | 0.005923 | 0.000635 |
| C(9) | | -0.022070 | 0.003371 |
| C(10) | | 0.635344 | 0.082860 |

*Source:* Pažun, 2014;

As in this model four indicators exist, the log of the real effective exchange rate, the level of net foreign assets , the fiscal deficit and the log of real GDP per capita, the coefficient is 3 (k = 3), therefore at the level of significance of 5% interval is (3.38 4.23) and at the level of 1 % interval is (4.30 5.23). It is concluded that the obtained F- statistic value exceeds the upper limit of the interval, which confirms the long-run relationship between real effective exchange rate (REER) and given indicators.

The next step was coefficients estimation by the least squares method (LS method).

Table 2 shows the estimated long run relationship and chosen lag structure for the ARDL modeling:

**Table 2.** Estimated Long Run Coefficients using the ARDL Approach

| Variable | Coefficient | Std. Error | t-Statistic | Prob |
|---|---|---|---|---|
| C | 0.209927 | 0.185903 | 1.12923 | 0.4614 |
| d(NFA) | 0.001999 | 0.000917 | 2.179205 | 0.2739 |
| d(FB) | -0.01311 | 0.002078 | -6.30951 | 0.1001 |
| d(LGDPO) | 0.498811 | 0.040639 | 12.27424 | 0.0518 |
| d(LOGOP) | -0.09347 | 0.035861 | -2.60632 | 0.2332 |
| LR(-1) | -1.19451 | 0.148777 | -8.0289 | 0.0789 |
| NFA(-1) | 0.005923 | 0.000635 | 9.325185 | 0.068 |
| FB(-1) | -0.02207 | 0.003371 | -6.54692 | 0.0965 |
| LGDPO(-1) | 0.635344 | 0.08286 | 7.66767 | 0.0826 |

*Source:* Pažun, 2014;
*Note:* 1) lr is dependent variable, that is, real effective exchange rate, expressed in ln;
2) highlighted coefficients are significant at the 10% level;
3) d – delta, difference, stationary representation of time series, their first lag;
4) „t-1" – related to first lag, in table expressed as LR(-1).

Table 2 shows statistical significance in the long-run of most coefficients (those highlighted).

The result in the Table 2, looking at fiscal balance, shows that higher fiscal balance, ie. lower fiscal deficit leads to an increase in national savings, thereby decreasing the equilibrium level of the exchange rate. In this case, coefficient -0.02207 by fiscal balance indicator means that one percent increase in the fiscal balance in terms of GDP (relative to selected trading partners) leads to a reduction in the equilibrium exchange rate of about 0.02% (if the other indicators do not change).

Furthermore, the result shows that the better the NFA position (relative to GDP), „higher" is equilibrium level. The 0.006 in front of net foreign assets variable means that ten percent increase in net foreign assets leads to increasing of level that represents the equilibrium in the long term by 0.06% (if the other indicators do not change).

The model shows that there was a significant effect of real per capita income on equilibrium. One percentage increase (the logarithms of the values) of given variable results in increasing in the exchange rate equilibrium level of about 0.6% (if the other indicators do not change).

The estimated exchange rate misalignment based on the above long-run relationship is plotted in Figure 1. The figure shows that the REER is overvalued constantly and has remained so even after 2009 depreciation, as well as after 2013.

**Figure 1.** ERER approach. Real effective exchange rates (REER) and estimated equilibrium real exchange rates (ERER)
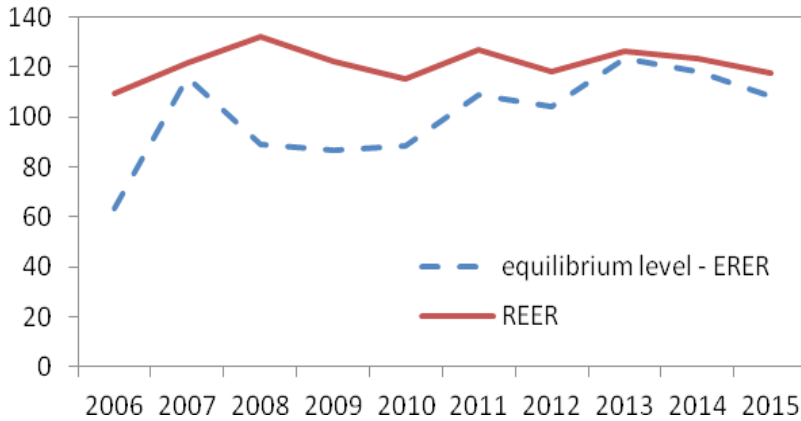


*Source:* Authors' calculations ERER, 2015;

**Figure 2.** ERER approach. Exchange rate misalignment (in percent)
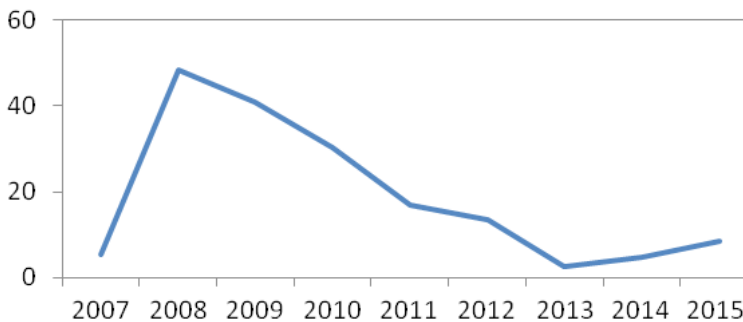


*Source:* Authors' calculations ERER, 2015;

Figure 1 and Figure 2 show that in 2007 REER is overvalued about 5.5%, with increasing next year. In fact, the real effective exchange rate increases in this period from 121 to 132 dinar (according to National Bank of Serbia's data), while the estimated equilibrium decreases from 115 to 89 dinars, so the gap increases. In subsequent years, the deviation is reduced. In 2011 and 2012, the exchange rate is overvalued by about 16% and 13%, respectively. In 2013, even single-digit deviation exists, according to research, as the closest to the estimated equilibrium, around 2.6%, and in the coming year, this difference increases slightly to 4.8%. Due to behavior of the effective exchange rate by October 2015, effective rate should again depreciate by 8.5% in order to remain on the equilibrium path.

## Agricultural sector in Serbia

Agriculture in Serbia is the most important part of economy and helps development of rural areas. Agriculture's contribution to Serbia's GDP remains high. In 2014, agriculture accounted for 9.1% of GDP, compared to the EU 27 average of 2%. This could be explained due to Serbia's fertile land and favorable natural conditions for agricultural production, as well as delays in structural changes in other sectors. According to the Serbian Statistical Office, 21% of the total labor force in the country works in agricultural sector.

Furthermore, agriculture is one of the most important export sectors in Serbia, with approximately 65 billion dinars in 2014, about 5% higher than in 2013. This trend increases in 2015, with almost 90 bilion dinars agro-food exports.

According to data of Statistical Office of the Republic of Serbia total agro-food imports in Serbia were valued in 2013 approximately 15 percent higher than in 2012. In 2014 agro-food imports reached approximately 43 billion RSD, or 11% higher value than in 2013.

The European Union remains the most important trading partner for Serbia.

Exchange rate fluctuations in 2016 will affect the agricultural markets more than ever, because there is an expectation of US dollar to strengthen, while the currencies of Latin America and Europe become weaker. During 2016 exchange rates will have a higher impact on the agricultural raw materials market more than ever, according to Dutch bank Rabobank, the leading financier of farmers and agro-companies worldwide.[5]

It is expected that the US dollar strengthen in 2016, and many emerging markets are likely to mitigate the monetary policy. When it comes to the individual agricultural raw materials, the Bank argues that sugar has the most optimistic prospects of all agricultural raw material for 2016. It is expected that the price of this sweetener, which is predicted that in the 4th quarter of this year reaches an average value of 14.5 cents per pound, rises to 15.5 cents in the 4th quarter in 2016.

The price of wheat is likely to be unstable because competing bid from the Black Sea region continues to displace traditional exporters.

## Conclusion

This paper consists of comprehensive overview of technique developed by IMF CGER, in order to estimate the equilibrium exchange rate in country that have experienced high macroeconomic volatility and not finished structural reforms.

The paper provides estimation of specific single-country equation for the ERER approach.

The study shows that long-term relationship between the real effective exchange rate and a set of fundamental variables exists, and, therefore, dependent and independent variables should not be considered independently or individually.

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5    Source: https://economics.rabobank.com/publications/

Any kind of "strengthening" the dinar has "artificial" character and is not a sustainable state. For example, appreciation in 2013 was not the result of better foreign trade, increasing the competitiveness of Serbia, better economic position of the country.

As the results of this study show, the dinar should be depreciated. In that exchange rate would increase exports and reduce the current account deficit. Furthermore, weakened dinar would enable more competitive domestic demand, independently of the export growth. This situation contributes in employment increasing and economic activity of the country.

The results need to be taken with caution, given the many shortcomings that restricted econometric analysis or the conclusion. Certainly, that was the reason why the IMF in the past did not provide this type of econometric research in case of Serbia. Significantly large limitation to the data exists, ie . unavailability of relevant data or relatively small sample size. In fact, the decomposition of former Yugoslavia, later Montenegro secession, as well as Kosovo and Metohija, makes availability of reliable longer time series more complicated. Finally, it has to be mentioned methodology mismatch for calculating values of specific variables.

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# APPENDIX

**Table A1.** Data description for ERER approach

| VARIABLE | DESCRIPTION | SOURCE |
|---|---|---|
| fb (fiscal balance) | fiscal deficit/GDP, relative to trading partners; formula is: $fb/BDP-\Sigma w_i(fb_i/BDP_i)$; $w_i$ are trade partner ponders | WEO, NBS (data in period 2002-2014) |
| loggg (general government consumption) | public spending/GDP, relative to trading partners, in ln; formula is: $gg/GDP-\Sigma w_i(gg_i/GDP_i)$; $w_i$ are trade partner ponders | WEO(data in period 2002-2014) |
| logti (total investment) | gross investment/BDP, relative to trading partners, in ln; formula is: $ti/GDP-\Sigma w_i(ti_i/GDP_i)$; $w_i$ are trade partner ponders | WEO(data in period 2002-2014) |
| logop (openess) | gross exchange (import+export)/GDP; in ln | WEO, NBS (data in period 2002-2014) |
| logtt (terms of trade) | terms of trade; in ln | RZS (data in period 2004-2014) |
| lgdpO | real GDP/per capita, in current prices US$, in ln | WEO (data in period 2002-2014) |
| Nfa | net foreign assets | LM[6], NBS (data in period 2002-2014) |
| Lr | real effective exchange rate, in ln | NBS (data in period 2002-2015[7]) |

*Note:* access to databases IMF WEO, NBS, RZS in June 2015;

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6   Lane & Milesi-Ferreti database

7   data until October 2015

# EKONOMETRIJSKA ANALIZA DEVIZNOG KURSA U SRBIJI I UTICAJ NA POLJOPRIVREDNI SEKTOR

*Brankica Pažun[8], Zlatko Langović[9], Ana Langović Milićević[10]*

## Rezime

*Ovaj rad pokušava empirijski da oceni ravnotežni nivo deviznog kursa. U tu svrhu se koristi redukovana forma pristupa ravnotežnog realnog deviznog kursa (ERER), razvijena od strane MMF konsultativne grupe za pitanja deviznog kursa (CGER).*

*U sprevedenoj single-country analizi koristio se ARDL pristup. Pošlo se od dinamičkog modela kojim se predstavio realni efektivni devizni kurs, odnosno redukovana relacija između zavisne realnog efektivnog deviznog kursa i skupa fundamentalnih promenljivih. Kako bi se utvrdilo postojanje dugoročne veze između promenljivih, koristio se granični test (bound test). Koristila se F - statistika za testiranje dugoročne relacije između realnog efektivnog deviznog kursa i samih fundamenata. Obzirom da su bile ispunjene odgovarajuće pretpostavke, sprovedena je ocena koeficijenata metodom najmanjih kvadrata. Rezultati su pokazali konstantnu precenjenost dinara na srednji rok.*

*Ključne reči:* ARDL, prilagođavanje, ravnotežni realni devizni kurs, ERER, Srbija

**JEL:** *C33, F31, F41, O24, Q10*

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# MOLTING OF BROILER BREEDERS CONDITIONS FOR ECONOMIC JUSTIFICATION IN CONTINUED PRODUCTION

*Bratislav Pešić[1], Nikola Stolić[2], Božidar Milosević[3], Zvonko Spasić[4]*

## Summary

*The method of artificial interruption of the production process by hens, broiler breeders, today known as the molting, it is often used in recent years as one of possible reasonable steps in making decisions on feasibility of continuing exploitation of broiler breeder safter the regular production process. The aim of this study was to test the economic profitability molting hens-broiler, during one exploitation period. It included the throat of hybrid heavy line COBB500. The animals in the house were exposed to the same microclimate conditions, with identical positions in relation to light, ventilation, water, food and fertilization system. The analysis of food consumption per produced egg can be notice that parents' hens during the process of molting consume more food by 43% compared to the hens fed the normal cycle of production. Achieved income was 2.54% higher after billing code for molting chickens instead of the regular production cycle. Economic indicators egg production after molting demonstrate justification of these biological and technological operations, considering that the net income per hen housed is the same income in the normal production process.*

***Key words:*** *molting, broiler breeders, capacity, chickens, economy.*

**JEL:** *Q10, Q11, Q13*

## Introduction

Intensification of production processes in poultry, improvement of the poultry

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production and the creation of appropriate reproce line with highly specialized production is conditioned by transition to the industrial mode of production. In recent years in the world and in our country, more and more often are used different methods that by chickens artificially interrupt the process of egg production, and after a certain period, shorter or longer, continuing the cycle of production.

This process in poultry is known as molting. Molting process is regulated by Thyroid gland hormones in which there is rest and regeneration of the reproductive organs, increasing the reserves of nutrients in the body of chickens, as well as to the replacement of feathers.

In the literature, numerous articles can be found on the topic analysis of artificial molting of heavy line hen hybrids. A large number of works relate precisely to the system of intensive breeding, due to the fact that the development of poultry production, in recent decades, moving towards its intensification. There are various methods for artificial hens in order to start a new production cycle. All of these methods can be divided into three groups (Hussein, 1996) method with limited food and water, the method of mineral-induced molting and molting which is caused by application of hormones. The most commonly applied method in practice is with limited food and water. The reason for its implementation is its simplicity and practicality. The effect of this method molting is reflected in a very fast reduction in the number of eggs up to 50% after 10 days of treatment (Martin et al., 1973; Khoshoei, Khajali, 2006; Yousaf, 2002), or to a complete reduction of the number of eggs and interruption capacity for a period of 14 days (Gilbert, Blair, 1975; Odunsi et al., 2002). It is also clear that in the implementation of this molting method there was a drastic reduction of body weight, reduction of concentration reproductive hormones in blood plasma and increase the concentration of thyroid hormones (Verheyen et al., 1983a).

Method molting by restriction of food and water, corrected the light regime, gives different results in terms of termination of egg production and speed the return of molting chickens in capacity. It is generally acceptable that hens are starved for 10 days, lay their first egg after 5 weeks, while 50% capacity back after 8 weeks from the start molting. (Hussein, 1996; Yousaf, 2002; Tops, et al., 2006). Involution of the ovaries and accelerated, but quite sufficient, regeneration causes reproductive organs quickly restore the load capacity of molting chickens and a larger mass of newly formed eggs (Donalson et al., 2005; Yousaf, Ahmad, 2006).

The resulting eggs in the production after molting used for incubation, showed significantly better results in terms of weight of the hatched chickens than eggs from continuous process of production (Oguike et al., 2004; Thomas et al., 2012). The aim of this study was to test the economic feasibility of molting hens-broiler parents, in one exploitation period.

## Materials and methods

The research was included throat heavy line COBB 500 hybrid, which were placed in one part of the building (a total of 3 identical parts) poultry farms in Gornje Crnatovo, near Nis. In a common technology on the farm parents approached settling manufacturing facility, or the beginning of exploitation. Based on the standard criteria of the animals in the facility were arranged and treated as a single group. The animals in the house were exposed to the same microclimate conditions, with identical positions relative to the light, ventilation, water, food and fertilization system. After completion of the operation in the normal cycle in the house is delivered required number of laying hens in order to compensate for the same, because of regular death in the production process, while males replaced by young roosters. It should be noted that in the first process of molting, parents consumed complete feed mixtures for nutritionwith16.5% crude protein in the first ten days of fasting (except for roosters because they later settled), and in order to raise the body weight to the optimum.

**Table 1.** Number of parents in exploitation.

| Regular cycle | | | | The first molting | | | |
|---|---|---|---|---|---|---|---|
| Age in the weeks | Number of heads | Male | Female | Number of heads | Age in the weeks | Male | Female |
| 18 | 1,380 | 120 | 1,260 | 58 | 1,380 | 120 | 1,260 |

Source: Authors' calculation based on a doctoral dissertation.

In order to perform the production control, the following parameters: the number of eggs laid, number of incubated eggs, egg mass laid down, the quantity of food consumed, the number of dead chickens were studied by the barn list. If it was possible, test the hypothesis of the differences between the average large independent samples according to Latinovic (1996) was performed. The resulting production indicators were used to determine the economic and financial analysis performance molting.

## Results and Discussion

*Table 2* shows, in parallel, the production results of the examined parental pairs on production cycles. Analyzing the total period of observation and monitoring the production results of parent couples of 462 days, it can be seen that broiler breeders showed a higher level of production in regular production cycle, despite the greater consumption of food that were recorded with parents in a regular cycle, a number of culled eggs and a smaller number of incubated eggs.

**Table 2.** The values production indicators of female parents.

| Cycle of production | Day of exploitation | The total number of eggs | Average capacity (in %) | Consuming the food per day(in g) | Consuming the food per egg (in g) | Mortality (in %) |
|---|---|---|---|---|---|---|
| Regular | 280 | 273,207 | 77.44 | 152 | 206 | 6.81 |
| I molting | 182 | 127,636 | 55.66 | 139 | 249 | 7.43 |

Source: Authors' calculation based on a doctoral dissertation.

A larger amount of eaten food is caused by fact that parents during the regular production cycles have the highest daily and both the maintenance needs, especially in the initial period when a lot of energy consumed and used for promotion of body weight, while at the same time, and percentage increase in capacity. It is also evident that the highest recorded maximum capacity was during the regular production cycle, although it is lower than the amounts Yousaf et al. (2007) studying the consumption of food produced per egg can be observed that the chickens in the process of molting and consumed 43 g (20.9%) more food in relation to the chickens were fed during the regular operating cycle.

One of the most important production parameters monitored during exploitation period, primarily from an economic point of view, certainly the distribution or weight of eggs on which it is exercised and the corresponding number of eggs for incubation and the number of which directly affects the number of the hatched chickens through which prices are achieving an economic effect of production. *Table 3* shows the number of eggs per distribution classes during exploitation period as a percentage (%).

**Table 3.** Distribution of eggs per classes during exploitation (in %).

| Cycle Classes | Regular ( $X$ ) | I molting ( $Y$ ) | Index I( $Y/X$ ) |
|---|---|---|---|
| SU+ | 2.1 | 0.3 | 14.3 |
| SU | 6.8 | 2.0 | 29.4 |
| S | 24.2 | 37.5 | 155.0 |
| A | 30.2 | 49.5 | 163.9 |
| B | 17.6 | 5.5 | 31.3 |
| C | 8.5 | 1.0 | 11.8 |
| D | 5.2 | 0.1 | 1.9 |
| E | 2.5 | 0.1 | 4.0 |
| Dirty | 2.0 | 1.5 | 75.0 |
| Cracked | 0.9 | 2.5 | 277.8 |

Source: Authors' calculation based on a doctoral dissertation.

The differences between a and b are significant at the level of P <0.05, and between a and c at the level of P <0.01. The analysis of the data obtained during the processing distribution eggs per class can be noticed that in the normal course of the production cycle obviously present a greater number of eggs so called outside class of eggs or eggs that are rejected due to their weight are not provided and conditionally usable for investment in the incubator (28%). Naturally, this is driven by a large number of eggs produced whose weight exceeds 70 g each, (SU + SU) or with a mass of eggs and 50 grams less (C, D, E, soiled and cracked). This trend of egg mass was not registered in molting chickens during the first cycle of molting, because in this period of exploitation also notes the largest concentration of produced eggs around the middle classes S, A, B, as well as in regular production cycle, although there is an evident difference in the distribution of eggs are removed as scrap eggs (7.6%). These differences in the mass of eggs and have statistical significance, as shown in the table.

Showing an increase of egg mass during the first cycle of molting from the regular production cycle expressed in index points clearly indicates the trend of their increase and shift their weight to heavier classes. The same results were obtained in the research conducted by Gordon et al., 2009. By organizing data obtained from regular production cycle and the first molting process there was noticed very significant differences in the parameters that are logically impose such a conclusion. By comparing the number of eggs produced per cycle shows that in the normal production cycle production (22%) more eggs. This is a clear indication to the advantage of exploitation of young flock number of fertilized eggs observed percentage points to the conclusion that it was a good choice of roosters in regular production process and in the process of molting. A larger number of culled eggs that appeared in the first production process points to the need to improve environmental conditions, but also to the advantage molting chickens. Detailed view of the production parameters are given in *Table 4*.

**Table 4.** The production parameters (in pieces, %).

| Cycle<br>Parameters | Regular | I molting |
|---|---|---|
| The number of produced eggs | 273,207 | 127,636 |
| % | 77.4 | 55.6 |
| Number of fertilized eggs | 254,410 | 116,404 |
| % | 93.3 | 91.2 |
| Number of incubated eggs | 196,708 | 117,936 |
| % | 72.0 | 92.4 |
| Number of culled eggs | 71,234 | 9,700 |
| % | 28.0 | 7.6 |
| Number of the hatched eggs | 157,563 | 97,061 |
| % | 80.1 | 82.3 |

Source: Authors' calculation based on a doctoral dissertation.

Further analysis of production results were partial or direct costs in different production cycles. Fixed costs (such as wages, amortization, utilities, etc.), were not observed and included in the calculations due to being completely equal impact in all production cycles. Winning results of cost analysis we used for comparison with the analysis of the data obtained income from the production value of day-old chicks, and thus occurred results that leads us to a conclusion during evaluating the profitability of production. The results of our analysis of the data we used to calculate the boundaries of economy which shows the situation when the cost of the same production value as well as cost-effectiveness and profitability of molting hens for production purposes. Analyzing the economic parameters of broilers production we notes that the largest input costs in the normal production cycle (290% more than in the first molt). This is understandable given the fact that the highest price, in addition to food consumption, supply flocks to start production. That kind of costs with molting do not have, because the hens that are used in the production process and further use to resume production. Comparing revenues during the regular production cycle with the first or second molt, it is noticed a clear difference between those processes.

**Table 5.** Financial and economic indicators of production broiler breeders in cycles.

| | Measure unit | Regularly cycle | | | I molting | | |
|---|---|---|---|---|---|---|---|
| | | quantity | price* | total | quantity | price* | total |
| Costs | | | | | | | |
| Hens | | 1,260 | 20.00 | 25,200 | 1,260 | 0.00 | 0 |
| KN | kg | 68,497 | 0.44 | 30,138 | 40,982 | 0.44 | 18,032 |
| wheat | kg | 0 | 0.25 | 0 | 330 | 0.25 | 83 |
| Vitamins SeE | l | 15 | 12.60 | 189 | 25 | 12.60 | 315 |
| Antibiotics | l | 2 | 25.00 | 50 | 14 | 25.00 | 350 |
| Vaccine | dose | 0 | 0.005 | 0 | 1400 | 0.005 | 7 |
| Total | | | | **55,577** | | | **18,787** |
| income | | | | | | | |
| eggs | pieces | 71,234 | 0.081 | 5,770 | 9,700 | 0.081 | 786 |
| chickens | | 157,563 | 0.50 | 78,781 | 97,061 | 0.50 | 48,530 |
| extracted hens | | 1,130 | 0.70 | 791 | 1,065 | 0.70 | 0,00 |
| total | | | | **85,342** | | | **49,316** |
| **DIFFERENCE** | | | | **29,765** | | | **30,529** |

* Price in Euros taken from www.stips.minpolj.gov.rs on the day of 11.09.2012, 1 € = 116.30 din Bulletin ZS936, 11.9.2012.

Source: Authors' calculation based on a doctoral dissertation.

It is logical to expect the best results in the normal production process, because young chicks have the largest capacity in that period. However, in practice very common

reasons why such rules and logic are not what is expected. These are exactly the reasons why, in our case showed that '' profit '' is greater during the first molting in relation to the regular production process, or another molting. The higher profit was caused by lower input costs and a larger number of breeding conditional eggs for incubation (Spasic et al., 2011).

In detailed analysis of the income realized in the normal production cycle and the comparison with the revenue generated in the first molting recognize the cost-effectiveness of the program of molting and repeated exploitation of female broiler breeders. Actual revenue was 2.5% higher in the first molting from the regular cycle of production. Realizing the fact that apart from regular production cycle from the production process after the first molting, and that periods exploitation parents are not the same for these two periods, we started calculating revenue per production day, or revenue generated per hen housed during the entire production cycle, as shown in *Table 6*.

It may be noted that the average of net in compere hen during molting cycle after the regular cycle of production colored by 2.54% compared to the same indicators in the normal production cycle.

**Table 6.** Standardized net income of parent couples.

| Production cycle | Exploitation day | The average number hens per day | The average revenue per day of production (u €) | The average revenue per housed hen(in €) |
|---|---|---|---|---|
| Regular | 280 | 1,195 | 106 | 23.62 |
| I molting | 182 | 1,162 | 167 | 24.22 |

Source: Authors' calculation based on a doctoral dissertation.

## Conclusion

Based on the analysis of production results arising out of the research is the production of heavy line parental pairs in different production cycles, before and after molting, and in conducted economic and financial analysis, it can be concluded that:

-The total number of eggs produced during the normal operating cycle is significantly higher in comparison to the production during the cycle after the first molting, observed a percentage of capacity by 21.8%.

-Hens after molting were producing eggs that did not meet quality standards and incubating for about 20.4% less than in chickens in the normal production cycle.

- Economic indicators of broilers production after the first molting demonstrate justification of these biological and technological operations, given that net income per housed per housed hens exceeds the same income in the normal production cycle.

- Lack of forced-molting process of production is clearly observed and measured due to considerably lower production volume and therefore this type of production can be organized in the event of market disturbances, lack of new parent flock in semi-intensive cultivation conditions of the parents, in order to maintain production with significantly reduced economic effect.

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# MITARENJE BROJLERSKIH RODITELJA USLOV ZA EKONOMSKU OPRVADANOST NASTAVKA PROIZVODNJE

*Bratislav Pešic[5], Nikola Stolić[6], Božidar Milosević[7], Zvonko Spasić[8]*

## Rezime

*Metod veštačkog prekidanja procesa proizvodnje kod kokošaka, brojlerskih roditelja, danas poznatiji pod nazivom mitarenje, veoma se često koristi poslednjih godina kao jedan od mogićih opravdanih koraka prilikom donošenja odluke o isplatljivosti nastavka eksploatacije brojlerskih roditelja nakon redovnog procesa proizvodnje.Cilj ovih istraživanja bio je ispitivanje ekonomske isplativosti mitarenih kokoši-brojlerskih roditelja, a u toku jednog eksplatacionog perioda.Istraživanjem su bila obuhvaćena grla teškog linijskih hibrida COBB 500. Životinje u objektu bile su izložene istim mikroklimatskim uslovima, sa identičnim pozicijama u odnosu na svetlost, ventilaciju, vodu, hranu i sistem za izđubrivanje. Analizom utroška hrane po proizvedenom jajetu uočava se da roditelji nosilje u toku procesa mitarenja konzumiraju više hrane za 43% u odnosu na nosilje hranjene u redovnom ciklusu proizvodnje. Ostvareni prihod je za 2,54% veći nakon obračuna kod mitarenih kokošaka u odnosu na redovan ciklus proizvodnje.Ekonomski pokazatelji proizvodnje jaja nakon mitarenja pokazuju opravdanost primene ove biološko-tehnološke operacije, obzirom da neto prihod po useljenoj kokoški isti prihod u redovnom procesu proizvodnje.*

***Ključne reči:*** *mitarenje, brojlerski roditelji, nosivost, pilići, ekonomičnost.*

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# HUNTING TOURISM IN THE FUNCTION OF RURAL DEVELOPMENT OF HOMOLJE

*Risto Prentović[1], Branislav Živković[2], Drago Cvijanović[3]*

## Summary

*Homolje, an area in eastern Serbia, which coincides with the territorial area of the Municipality of Zagubica, is extremely rural. Despite the fact that it has significant natural resources, this area is among the least developed in Serbia. Decades of unfavorable economic situation in Homolje has led to permanent depopulation in the form of emigration to more developed centers in Serbia or abroad, on the one hand, and negative population growth, on the other hand. This pathogenic occurence can be prevented only by the appearance of economic recovery based on the concept of intensive rural development, i.e. operation of a set of interrelated economic activities and other activities (agriculture, manufacturing, forestry,water management, trade, tourism, crafts, hunting, fishing, etc.). Analysis shows that, according to available adequate resources, hunting tourism can become a significant factor in fostering rural development of Homolje. The subject of this research is dedicated to finding the place, role and potential of hunting tourism from the aspect of rural development of Homolje.*

**Key words:** *Serbia, Homolje, hunting tourism, rural development*

**JEL:** *R110, Q15*

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## Introduction

The most propulsive economic resources of the Republic of Serbia are located in the so-called rural areas. OECD defines a rural area as a place at the local level where the population density is up to 50 people per km². According to the Council of Europe, a "rural area" is a stretch of land in the interior or on the coast, which includes smaller towns and villages, where the main part of the territory is used for: a) agriculture, forestry, water management and fishing, etc.; b) the economic and cultural activities of the population of the area (trade, industry, services); c) non-urban recreation and leisure activities; and d) for other purposes, such as housing (Lazić, 2007).

A rural area is, therefore, an area whose main physical and geographical feature is the use of the land primarily for agriculture and forestry. Rural areas include people, land and other natural resources in open areas and rural settlements beyond the immediate economic impact of major urban centers. Rural areas, as a rule, have fairly rich ecosystems and biodiversity is relatively preserved. When we add the number of physical and geographical, as well as climate conditions, it provides favorable conditions for the development of agriculture, forestry, water and their tangent activities.

On the basis of these resources, it is necessary, primarily at the local level, to integrate these and other activities in order to achieve synergies in the field of rural development in the rural areas.

Rural development can be defined as a function of a set of interrelated economic activities and other activities, which, in addition to primary agricultural production, include manufacturing, forestry, hunting, fishing, water management, trade, tourism, carfts, and a number of activities related to spatial planning.
Tourism has been a significant integrating factor of business and other ventures in rural areas in the last decades, and it has its specific form − hunting tourism, especially in areas with relatively preserved biodiversity (rich fauna and hunting).
One of the distinguished rural areas in Serbia is the area of Homolje. It is a small geographical area in Eastern Serbia, which is located between 44°05' and 44°22' of north latitude and between 21°31' and 21°50' of east longitude (Miljković, 1992). Administrative area of Homolje entirely belongs to the municipality of Zagubica. The subject of this research is finding the place, role and potential of hunting tourism from the aspect of rural development of Homolje.

**Map 1.** Municipality Žagubica
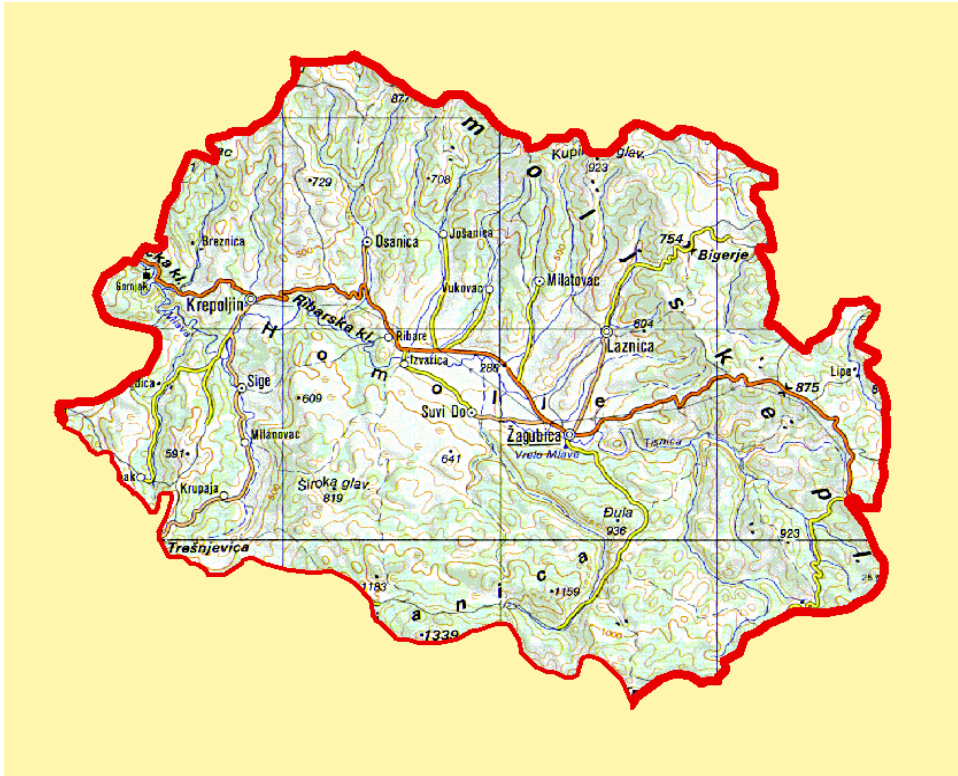


***Source:*** *Various authors (2009.), „Strategija održivog razvoja opštine Žagubica 2009 –2013",*
*Žagubica.*

## Material and methods

Empirical data are the written materials (scientific and technical literature, laws and regulations, planning documents and other relevant documents of business entities and local communities of Homolje) and factography (and recordings of observations and tests) from the field. For processing, analysis and discussion of the research results, the following scientific methods were used:

- Systematic observation,

- Analysis (of the literature and factual) content,

- Interviews with competent people in the field, and

- Statistical methods (descriptive statistics).

## The position and size of Homolje

The area of Homolje has an irregular rectangle shape positioned in the direction of east-south-east − west − north-west, with a length of about 35 km, while the widest point is about 26 km (Živković, 2011). Its territory is surrounded by mountain ranges on all sides. It is separated by Homoljske mountains (940m) from Zvižd on the north, by the mountain crown of Beljanica (1336m) from Resava on the south, by the Crni Vrh massive (1027m) from the Crna Reka basin in the east, and by Gornjak low mountains (825m) from the lower plains of Mlava in the west. Geomorphological unit of Homolje consists of two parts: Žagubička valley to the east and Krepoljinsko-Krupajska valley to the west, between which there is Beljaničko-Homoljska rung (Miljković, 1992).
Size of the territory Homolje, generally the Municipality of Zagubica, is 759.99 km², and there are 16 villages, of which the largest are Žagubica and Krepoljin. Neither of these settlements is of the predominant urban character.

As for the constructed transport infrastructure, Homolje lags behind the national average. It is located about 170 km away from Belgrade, and the main traffic corridor is the regional road R 105 Pozarevac − Petrovac − Žagubica − Bor. Two more regional roads pass through the territory of Homolje, as follows: R 104 Žagubica – Majdanpek and R 216 Krepoljin – Despotovac, which are of much lower quality than the aforementioned road R 105. All the villages in the municipality of Žagubica are connected via the local road network. The main roads in the area of Homolje are only 14 km long with the length of the local road network of 102 km.

## Flora and fauna

Geological and pedological, climatic and hydrological features in a given geographical area, along with anthropogenic influences, constitute distinctive geographical characteristics of the Homolje area.

Floristic composition of Homolje is heterogeneous, and in that territory the regions that are characterized by specific plant associations can not be clearly distinguished nor delineated. Some differences in the horizontal extent of individual plant species are the result of local differences in the composition of soil, underground water depth, slope, sunlight and others. There is no clear zone division in the presence of individual plant units, although grass and forest cover, including associations that can be divided into separate units, can be distinguished as separate units (Miljković, 1992).

Grass phytocoenoses is spread without zones, i.e. from the lowest valley level to the highest mountain ranges, consisting of associations of marsh vegetation and the representative lush valley meadows and mountain pastures. Forest vegetation of Homolje is represented by several types, depending on the quality and type of soil, as well as the altitude. In the valley of Mlava and its tributaries, there is willow, poplar and elm. In the medium altitude there is oak, maple, hornbeam, hawthorn and other trees, and above this zone there are beech forests, as the most common in Homolje. Coniferous forests cover small areas and are represented in fragments, located in areas

deforested by unplanned cutting, where the erosion was intensive (Miljković, 1992).

Theterritory of Homolje is inhabited by diverse wildlife, and due to a significant refinement of the territory, the wildlife has been pushed back to the forest and grass fields of the surrounding mountains, which made the habitats of many species very limited. Hunting game in the territory of present Homolja includes deer, wild boar, rabbit, pheasant and partridge, as well as predators (wolves and foxes, and more recently jackals). In almost all rivers of Homolje, especially in mountain streams, ichthyofauna (trout, barbel, chub, gudgeon and carp) is significantly represented.

## Population of Homolje

According to census from 2011, there are five citizens per square kilometer in Homolje, making this area one with the smallest population in Serbia. Depopulation is a constant feature of the demographic picture of the area in the last half of the century, as evidenced by all population censuses since 1961 (Živković, 2011). The age structure of the population is quite unfavorable because more than a quarter of the population (25.7%) is older than 65 years of age. Working population share in Homolje is 56.8%. Of the total population aged over 15 years, even 12.2% have no educational qualifications, and 33.9% have not completed primary school. On the other hand, only 2.6% of the given population hold a university degree. Ethnically there is the largest number of Serbs, while Vlachs are also present as a national minority.

## Economy of Homolje

Homolje is one of the least developed areas in the Republic of Serbia. According to official statistics,  its share in the gross domestic product of the Republic of Serbia is only 0.06% (Republic Statistical Office, 2007). Domestic product per capita in the municipality of Žagubica is 50,081.00 RSD, which is less than 40% of the national average. Agriculture has the major role in the economy of Žagubica, that in the total new value has the share of 56.33%, which clearly speaks of its dominance. Far behind, there is the manufacturing industry with 10.23% and trade with 7.93% Motels, restaurants, bars, and cafe bars account for 2.84%. According to the same source, in the municipality of Žagubica in the treated period (and by all indications, the situation has not significantly changed even today), there were a total of 1,476 people employed, while the number of unemployed was 763 people. At 1,000 people, 131 were employed and 24 were unemployed. Although the number of employees should be treated with caution, the data show that the number of employees is more than twice lower than the national average, because in that period, of the average of 1,000 people 271 people were employed.

**Table 1.** The share of economic activity in the formation of domestic product of Žagubica unicipality

| Activity | 2010. |
| --- | --- |
| Agriculture, hunting, forrestry and wate management | 59.33% |
| Fishing | 0.49% |
| Mining ore and stone | 8.23% |
| Processing industry | 8.26% |
| Production of electricity, gas, and water | 2.13% |
| Construction industry | 4.80% |
| Wholesale and retail trade, repairs | 6.93% |
| Hotels and restaurants | 2.84% |
| Transport, storage and communications | 5.61% |
| Real estate and rental business | 0.25% |
| Healthcare and social work | 1.1% |
| Other communal, social and personal services | 0.00% |
| Total | 100.00% |

*Source: Republički zavod za statistiku, 2012.*

Due to the severe economic underdevelopment and the lack of production and processing capacity, a large number of people migrated from the area to the big cities or to the EU. The economy is still underdeveloped in Žagubica and tourism could be the engine of development with regards to the potential that the municipality has. The problems young people who stayed in the area are facing are very strong, and they necessitate finding the solution. According to the above presented resources in Homolje area, one of the relevant solutions to this problem, therefore, is to intensify the development of **tourism** and its related activities.

***Tourism potential of Homolje*** could be defined by several parameters:

**- Tourist position of the municipality** of Žagubica represents the relation to the routes of tourist developments, both domestic and foreign. The road transport has the largest importance given level of the construction of infrastructure. The quality and density of the road infrastructure is very poor.

**- Natural tourist values.** The municipality of Žagubica is characterized by a wealth of natural features such as: mountain ranges that surround it (Beljanica, Homoljske Mountains, Gornjak Mountain, Crni vrh); gorges and canyons (Gornjačka Gorge); a large number of springs (Mlava spring, Krupajsko spring); thermal sources (spas); natural stone bridges (rare forms of karst terrain – Osanički natural stone bridge), sinkholes, multi-coned closed depressions, hydrographic values (Mlava river, numerous springs and wells); biogeographical value (forest expanses, hunting, fishing areas).

**- Historical tourist values** are reflected in the archaeological sites from the Roman period that were used to secure the important Roman road "Via Militaris" which went through the Gorges of Mlava; monuments of medieval culture (remnants of the

medieval walled city of Pharynx, Blagoveštanje monastery, the monastery Gornjak, Trška Church) .

**- Ethnographic tourism value** of the area associated with the Serbian and Vlach population. It is reflected in the abundance of customs, folklore, costumes, culinary specialties.

**- Events as tourist attractions**: "Golden Hands of Homolje", reconstructed "Homoljski motives" (Springs of Homolje) in Žagubica (which always takes place in the days of the Holy Trinity in the period (May-June); Spasovdanski meetings in Krepoljin; chase for Homolje wolf in Žagubica, (held every year in mid-January) and "Days of fungi and plants" in Krepoljin (held every year in September).

Accomodation tourist facilities in Homolje are insufficient for accomodation of a large number of tourists, especially in the time of the events, because in the entire Homolje region there is only one motel, "Vrelo", with a capacity of 80 beds where tourists can get lodging. The restaurant capacity is 400 seats. Six other restaurants operate on the territory of Homolje with capacities ranging from 30 to 100 seats for dining. With the appropriate rehabilitation and reconstruction, abandoned farms and bachia that have an unused potential, can be adapted for the needs of lovers of nature, fishing, and hunting (Živković, 2011). The general opinion of the competent experts is that these natural resources should be animated, integrated and economically effectuated into a complex form of tourism, which is **rural tourism**. Generally, it covers all tourism activities in rural areas. According to one definition. it is "a wide range of activities, services, and delights 'secured' by the farmers in order to attract tourists to their area in order to create additional income." (Hall, Kirkpatrik and Mitchell, 2005).

The Council of Europe (in 1986) defined the rural tourism as an activity that includes all activities in the rural area, and its main features are calm and preserved environment, the absence of noise, communication with local people, local food and familiarization with rural activities (According to: Todorović, Štetić, 2009). This is a broader definition, and the narrow one is: "a wide range of activities, services, and delights provided by farmers and peasants in order to attract tourists to their area for creating additional income." (Lazić, 2007). Rural tourism is, therefore, tourism in rural areas, and it can incorporate almost all the activities carried out there. Natural resources in rural areas enable the introduction of new non-agricultural activities (including rural tourism), which ensures the creation of additional revenue. This, in turn, improves the quality of life and stop the demographic decline in these areas. Consequently, income from rural tourism can support the economic and general recovery of rural areas. Moreover, rural tourism is a suitable tool for the revitalization of abandoned rural areas by increasing the diversity of occupations and job creation, as well as the conservation and improvement of the environment, which is the basis for their prosperity in the future. Therefore, it serves to stimulate economy growth, to increase the opportunities of underdeveloped areas, and to improve the standard of living of the local population.

Analyzing a number of literature sources that deal with this issue, it can be concluded that rural tourism is characterized by the following (Todorović, Štetić, 2009)

· It is located in rural areas

· Represents and promotes open space,

· Intimate contact with nature and the natural world, and is an integral part of it,

· Respects the heritage of "traditional" societies and practice,

· Allows participation in all activities, traditions and way of life of local
 population,

· Provides personalized contact,

· Provides a high percentage of revenue from tourism and benefits the rural community.

Rural tourism is often considered to be a form of tourism which has sustainability, i.e. it attracts few visitors, it does not require major infrastructure development, and tourists are usually genuinely interested in the local culture and tradition. However, opinions are divided on the economic viability, i.e. profitability of rural tourism, as the demand is mostly seasonal, occupancy is low, and investments in tourism infrastructure and superstructure are often high.

Some researches of the issues of rural tourism in Serbia indicate that this form of tourism can be profitable provided that integration and connection with other forms of tourism in rural areas, such as, among others: ecotourism, ethno-tourism, spa tourism, recreational tourism, fishing and especially hunting tourism, is achieved.

### Potentials of hunting tourism in function of Homolje's rural development

Hunting tourism is an activity that, on the one hand, belongs to hunting as a form of economic activity, and on the other, it is a special form of tourism. The main purpose and outcome of hunting is, in fact, the activity that brings significant *economic benefits*. For example, according to information obtained by Kurjački (2011), only in the United States, during 2006, 12.5 million hunting participants made a turnover of over 25 billion dollars. The same author has come to the conclusion that, for example, in Tanzania, trophy hunting within the hunting tourism activities, has brought the average financial gain of up to 40 million dollars a year at the beginning of this century, with the tendency of continual growth and, as such, has a very important role in rural development of the country (Milojević, Pejić, 2010).

One author (Vujović, 2011) places an emphasis on *the economic function of hunting*, whose purpose is, primarily, the protection and improvement of the habitat conditions for the existence of the game, their care, protection, and sustainable exploitation, and secondly, the reduction of damage caused by wild animals by reducing their overpopulation in biotopes (Marić, 2003). In this context, hunting is defined as "a set

of human activities that are aimed at harmonizing the relationship between man and animals, based on the knowledge of the basic biological characteristics of the individual species, environmental factors (conditions) of space, and most important tenets and principles of integrated management, rational use and sustainable development."

In defining hunting, other authors favored its economic dimension by defining it as an "economic activity, which cannot be precisely determined and belonging to production or service industry. It includes both of the aforementioned notions, because it involves cultivation, preservation and use of shot game which could be considered belonging to production industry and defined by the concept of hunting management. Equally, it includes hunting tourism as the most profitable branch of hunting economy, which could be considered as a service industry."(Šelmić et al., 2001).

A more comprehensive and a more extensive explication defines hunting "as *a complex human activity*, that is, the activity of special social interest and importance in the function of rational and sustainable hunting, permeated with the spirit of humane, chivalrous, and permissive attitude towards the game and nature in general; an activity for whose purpose the additional activities of the hunting industry are conducted: care, protection, and the use of game and hunting areas, scientific research and protection, and the enhancement of natural habitats and the environment of hunting game" (Prentović, 2006).

The importance of hunting is also reflected in its contribution to the development of other industries including: agriculture and forestry (by encouraging the cultivation of the cultures used for the nutrition of the game, forestation, planting trees and shrubbery, protection of forest seed-stands and agricultural crops from wild animals, etc.), tourism (through tourist-hunting activity), catering industry (by expanding the network of restaurants and the use of game meat in their cuisine), commerce (by selling items of meat, skin, fur, antlers, tusks, bones of wild animals, etc.), and also other industries, such as travel and telecommunications industry, and others (i.e. those that produce hunting weapons, ammunition, equipment, clothing, souvenirs, etc.).

Rural areas, such as Homolje, as it has been argued, have rich ecosystems and biodiversity, and from that aspect, hunting may represent a significant contribution to rural development, both in economic, and social and environmental aspects. The necessity of agriculture diversification in rural areas necessitates the introduction of various economic activities to the agricultural households, which in that way, have an opportunity of claiming the additional revenue. Tourism industry, or hunting tourism as its selective form, may represent the quickest and most economical way of rural development.

Professional literature has given a few relevant definitions of hunting tourism. It seems that the most acceptable is the one which assumes this form of industry as "the movements and active stays of tourist-hunters in specific surroundings – a hunting ground, as a part of a healthy natural environment – in order to hunt (shoot, capture, observe and record) game, by which, its participants (hunters-tourists) satisfy a strong motive (a primary hobby, and a passion to some). At the same time, these participants pay the fee for the shot game (trophies, meat, leather, etc.), accommodation, and food

in adequate catering facilities, as well as other contractual services, according to price lists valid at the time" (Prentović, 2008).

The specific characteristics of hunting tourism are:

- It occurs mostly outside the tourist attractive areas, and outside the main tourist season
- The income from tourism in highly significant for organizations which deal with the conservation, cultivation  and use of wildlife;

- The range of general tourist offers of Serbia is complemented and enriched by hunting-tourist offer (Prentović, 2005).

Mediation in hunting tourism, organization and execution of the hunt, renting vehicles for the transport and accommodation of tourist-hunters, hunted wild game processing, evaluation big game trophies, rental of hunting weapons, providing hunting ammunition, and other services for hunters-tourists during hunting, are considered as services in hunting tourism.

In relation to other forms of tourism, the specificity of demand in the hunting tourism lies in its multiple layers, which is based on the specific needs of tourist-hunters, and those needs, besides hunting, are: active leisure and recreation, staying in healthy natural environment, enjoying natural beauties, or the exotic landscapes of hunting grounds with specific biocenoses and attractive species of flora and fauna, educating for successful hunting tourism activity, etc. On the other hand, in addition to the diverse and prime trophy game, hunting-tourism product  assumes other types of services, primarily: accommodation, meals, transportation, educational, cultural, fun, and recreational services and activities and the like.

As a segment of hunting, hunting tourism is closely associated with a greater number of economic and non-economic activities, especially with forestry, agriculture, water management, sports, education, science, culture and others. This is so because the hunting in the formation of their "product" depends on the resources of these fields. Thus, for example, forestry, agriculture and water management provide hunting, that is, hunting tourism, the necessary spatial and environmental milieus for the existence of game, as the main motivation for hunting-tourist recreational activities. These industries also provide the grounds for the implementation of hunting tourism as the main segment of hunting tourism offer. The enlisted economic activities provide the elements for enriching hunting-tourist offers with programs which include sport, educational, cultural (including festivals) and scientific-specific character. Hunting tourism reciprocates these (economic and non-economic) activities by allowing them to participate in the distribution of income generated through hunting-tourist turnover.

Hunting tourism, a future section (a segment, a selective form) of tourism, correlates with industries, such as catering, transport, trade, and other trades. This is because accommodation services, food and transport of tourist-hunters, their supply with various necessary items (hunting weapons, ammunition, equipment), souvenirs and provision of certain services (repair of weapons, equipment, etc.) represent a significant part of the structure of hunting-tourist product.

Research conducted shows a high correlation of hunting with rural tourism. It consists in the fact that hunting areas (hunting grounds) are fully located in rural areas; therefore, catering facilities of both hunting and rural tourism may offer its services to the clientele of both of these branches of tourism. The connection of these two forms of tourism is also reflected in the field of tourist demand in such a way that a statistically significant number of hunter-tourists prefer to spend their stay in hunting-tourist destinations with other people (family members, business partners, a business escort) who might not be fans of hunting, and prefer exploring new and unfamiliar landscapes and gaining new experiences and knowledge.

As an integral and most propulsive economic segment of hunting, hunting tourism gets a significant part of the income returned, which is mainly directed to the production, care and protection of wildlife, i.e. bringing the same number of specific units of game which had been brought out of the hunting grounds. In addition, a part of the financial resources obtained through hunting tourism focuses on investing in order to improve the overall conditions for the implementation of the hunting tourism and hunting in general (construction and maintenance of the facilities for: hunting tourism, food and accommodation of tourists, various other services for tourists in hunting, such as transportation equipment, etc.). Therefore, the notion that hunting tourism is the main generator of the development of hunting is based on strong grounds.

There is one functional hunting ground on the territory of Homolje whose name is identical to the name of the area. It is now a respectable hunting tourism destination in Serbia. Hunting ground "Homolje" is managed by the Hunting Association of Serbia through the Hunting Association "Jovan Šerbanović" from Žagubica. It was found by the decision of the Ministry of Agriculture, Forestry and Water Management No. 324-02-00095/4-05-10, published in the "Official Gazette of the Republic of Serbia" No. 70/2005. from 29.06.2005. Hunting ground "Homolje" covers the areas of forests, land, and water territory Žagubica, an area of 71,791 ha. Hunting areas (all parts of the hunting grounds where game has all the necessary conditions for survival and reproduction, and on which it is bred, protected and used, i.e. hunted) encompass 67,200 ha or 93.61% of the total hunting ground "Homolje." Structure of hunting "Homolje" is shown in Table 2.

**Table 2.** Structure of hunting grounds "Homolje"

| Forrest and forrest grounds | 32,988.00 ha | 45.95% |
|---|---|---|
| Meadows and pastures | 25,122.00 ha | 34.99% |
| Arable lands and gardens | 9,090.00 ha | 12.67% |
| Orchards and vineyards | 2,715.00 ha | 3.78% |
| Other | 1,876.00 ha | 2.61% |

*Source: Popović, 2005,*

Due to the favorable natural and geographical conditions, hunting ground "Homolje" represents a habitat or a stopping-off point for many species of game. *The species of game that are bred* in it are: roe deer, wild boar, rabbit, pheasant and partridge, and the migratory birds that are also present (during migration and nesting) include: quail,

woodcock, wood pigeon, dove, wild goose, wild duck and others.

**Table 3.** Productive hunting area of hunting ground "Homolje" designated for breeding game

| Type of game | Productive hunting area in hectares |
|---|---|
| Roe deer | 45.000 |
| Wild boar | 33.000 |
| Rabbit | 45.000 |
| Phaesant | 15.000 |
| Partridge | 20.000 |

*Source: Popović, 2005.*

**Table 4.** The number of bred game in hunting ground "Homolje" on the day 01.04.2013.

| Type of game | Numbers (cirka) |
|---|---|
| Roe deer | 1120 |
| Wild boar | 230 |
| Rabbit | 3200 |
| Phaesant | 2605 |
| Partridge | 1750 |

*Source: Internal documents of the Hunting Association „Jovan Šerbanović", Žagubica*

Over the last few years, migratory movements of deer game and chamois from neighboring hunting grounds to hunting ground "Homolje" have been registered. For now, hunting ground "Homolje" does not manage deer and chamois, but the project for the reintroduction of deer from other hunting grounds to hunting ground "Homolje" is being developed.

Predatory species of furred game that are present and allowed to be hunted are: foxes, martens, wild cats and wolves. When it comes to the jackal, in the last eight years three shootings have been registered, one of which was killed under the wheels of a car. A special feature is the occurrence of lynx on Beljanica, whose presence has been determined in this location. The number of foxes varies from year to year, and the number of this population is largly influenced by infectious diseases that decimate this species. On the other hand, apparent increase of lynx and wild cats has been evidenced. The wolf population can be characterized as stable with a slight increase in number. The foregoing data points to the existence of attractive hunting species in the hunting ground "Homolje."

Throughout the twentieth century Homolje, as a hunting, or a potential hunting-tourist destination, remained unknown to a large number of people who love nature and hunting in this country (Yugoslavia and Serbia), let alone abroad. Not before 2002 does the active promotion of hunting-tourist potentials of this destination begin. In the last ten years, large hunting-tourist events included three wolf-chases, which have

shown that there is a huge positive impression on the hunting public for hunting in Homolje. Besides the local hunters chases have been attended by hunters from abroad: Austria, Germany, Czech Republic, Slovenia, France, Italy, and representatives of the diplomatic corps accredited in the Republic of Serbia.

Experience shows that such events have been useful, not only for the aforementioned hunting association, but also for traders, caterers, bakeries, transportation companies from the territory of Homolje and beyond. This is because these events were attended by hundreds of hunters. Acceptance of such a large number of guests and quality arrangement of the hunt, represented a highly complex and delicate task of securing the area, because it required coordinated efforts of many economic and other subjects for serving hundreds of clients in short and limited time frames. At the same time, the lack of catering facilities on the territory of Homolje represents the crucial limitation which determines the stay of the majority of guests in this area to less than 24 hours limit. As a result, the financial effect of these events was much lower than would have been, if the events had lasted for more than one day.

The current activity of the hunting ground "Homolje" is organizing individual and group (up to 30 participants) tourist hunts. Past experience has shown that the organization of such hunts for hunters-tourists is in many ways simpler than the hunting-tourist events such as wolf-hunts. Hunter-tourists have expressed a great interest in hunting wild boar from a hunting stand, and with bay and catch dogs, which is very attractive in Homolje, primarily due to the abundance of game and terrain configuration.

Besides the wild boar offer, hunting grounds "Homolje" offers roe deer hunt to hunter-tourists, which is a special attraction due to the beautiful landscapes of roe deer habitat. Although a mountainous region, it is particularly interesting that Homolje is rich in feathery game. Foreign hunters have expressed particular interest in hunting pheasant, woodcock and partridge. Following the latest trends that dominate the market, the Hunting Association "Jovan Šerbanović" prepares a special offer to the interested clientele in the form of increasingly attractive and interesting form of hunting tourism − a photo-safari.

Development of hunting tourism in Homolje in the past few years has been marked by a close relationship between the local self-government, tourism organizations and hunting associations. Building awareness that hunting is a part of the cultural heritage of the population of Homolje, and that Homolje is one of the most attractive hunting areas in the country, has encouraged both the local government and the tourist organization to provide means to the hunters' association, in promoting hunting tourism potentials of Homolje at fairs and other events for the promotion of tourism. Real income opportunities and job openings have caused the inclusion of such entities in the idea of developing hunting tourism and actualizing these ideas on the field (Živković, 2011).

## Conclusion

As displayed by the presented facts, Homolje belongs to one of the most economically underdeveloped areas in Serbia, being an extremely rural area. On the other hand, it has significant natural resources at its disposal. In the last half of the century, as a result of economic underdevelopment and lack of prospect, there has been a constant decline in the population of Homolje, one of the reasons for which has been negative population growth, the other being the migration of working-age population to the developed centers (Belgrade, Nis, etc.), and abroad to a large extent.

A favorable opportunity for economic development and ending depopulation trends of Homolje lies in intensifying its rural development by activating existing natural and human resources, with adequate integration of promising industries and sectors (agriculture, forestry, mining, energy, tourism, hunting, fishing). That requires substantial endeavors to improve the necessary conditions for the development of the aforementioned industries and activities. The assessment of the acclaimed scientists and surveyed experts is that hunting tourism − among other industries or activities − could be one of the important factors of rural development of Homolje, but in order to be so it is necessary to accomplish the following prospects:

-To significantly improve transportation infrastructure of the area and a wider region (Braničevo District) by building a quality road network, especially the roads that connect this region with Corridor X (road and railway line Belgrade − Nis − Bulgaria), and connect Bor and Timočka Krajina with Bulgaria and Romania. It is also necessary to establish an extensive road network through all the areas of the hunting grounds which would be suitable for the movement of off-road vehicles, so as to comfortably transport hunter-tourists to their hunting preserves, that is, to enable hunting game from vehicles to those who prefer it (of course, when a vehicle is not in motion).

- With the support of the wider community, particularly from the potential investors, and by the reparation and reconstruction of the existing catering facilities, the Local government, Tourist Organization of Žagubica Municipality and the user of hunting ground "Homolje" should enable the construction of additional high-quality accommodation facilities for hunting-tourist and tourist offers in general, by organizing events that gather a large numbers of tourists, such as hunters assemblies on an international level, as well as other events in the field of ethnic, ecological, cultural, rural, fishing, sports and recreation tourism (e.g. rafting) and others.

- Professionalization of the general management of hunting ground "Homolje" so as to ensure that highly professional and interdisciplinary funded realization of complex activities of breeding, securing, and sustainable use of game, as well as efficient management and marketing of hunting-tourist activities of this hunting destination. Favorable opportunities for this are provided by certain regulations of the new tourism laws on both game and hunting, and it is up to hunting and tourism workers of Homolje to implement these laws in their practice as soon as possible, so that the basis of hunting tourism personnel in this area could produce and successfully market a high-quality

and competitive hunting-tourist product.

- Since hunting-tourist activity can not successfully exist or function by itself if it does not have a firm stand in the entirety of the economy and other industries − especially if it is absent from the tourist offer of one area − there is a necessity for a stronger connection and integration of all the relevant subjects of this destination when it comes to designing, planning, operationalization and placement of a complete tourist product, the part of which being a hunting-tourist product, that would make the fundamental correlative link and the backbone which constitutes a recognizable brand of this area.

By implementing these prospects, the hunting-tourist destination of Homolje would constitute a very respectable potential of Serbian hunting-tourist offer, the basis of which is the presence of the varieties of game for hunting, and attractive hunting preserves of hunting ground "Homolje", which is why it is considered exceptional, distinctive and different from the others. All this can ensure that hunting tourism in Homolje becomes one of the important factors of rural development of this region, which will, ultimately, enable realization of more significant income, thus opening new jobs and hiring people.

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# LOVNI TURIZAM U FUNKCIJI RURALNOG RAZVOJA HOMOLJA

*Risto Prentović[4], Branislav Živković[5], Drago Cvijanović[6]*

## Rezime

*Homolje, oblast u Istočnoj Srbiji, koja se teritorijalno poklapa sa područjem Opštine Žagubica, izrazito je ruralno područje. I pored toga što raspolaže značajnim prirodnim resursima ova oblast spada među najnerazvijenije u Republici Srbiji. Višedecenijska nepovoljna ekonomska situacija u Homolju dovela je do permanentne depopulacije u vidu iseljavanja u razvijenije centre u Srbiji ili u inostranstvo, s jedne, i negativnog prirodnog priraštaja stanovništva, s druge strane. Ovu patogenu pojavu može sprečiti jedino ekonomski oporavak zasnovan na konceptu intenzivnog ruralnog razvoja, tj. funkcionisanja skupa međusobno povezanih privrednih delatnosti i drugih aktivnosti (poljoprivrede, prerađivačke industrije, šumarstva, vodoprivrede, trgovine, turizma, zanatstva, lovstva, ribarstva i dr.). Analize pokazuju da, shodno raspoloživim adekvatnim resursima, lovni turizam može postati značajan faktor pospešivanja ruralnog razvoja Homolja. Predmet ovog istraživanja upravo je posvećen sagledavanju mesta, uloge i potencijala lovnog turizma na planu ruralnog razvoja Homolja.*

***Ključne reči:*** *Srbija, Homolje, lovni turizam, ruralni razvoj*

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# BANKRUPTCY PREDICTION MODELS IN THE SERBIAN AGRICULTURAL SECTOR[1]

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**Summary**

*The aim of this paper is to present different models for predicting the possibility of opening bankruptcy proceedings in companies in Serbia, as well as to research which models are most suitable for companies in the agricultural sector. In this paper, we have used and displayed three models: the Altman's Z-score model, Kralicek's DF model and Quick test. Many authors have dealt with this issue, but most of them have developed models for developed markets, which are different from market of Serbia. Striving towards improving the analysis and prediction of bankruptcy has led to comparison of the reference value, in order to obtain concrete models for the evaluation of difficulty in the functioning of the company. In this connection, on a sample of five companies operating on the territory of the Republic of Serbia, we have applied three models that used standard financial indicators to show the financial condition and stability of the company. Results suggest that Kralicek's DF model indicates better financial state of the company than Altman's Z-score model, considering the characteristics of the market in which the model is formed.*

***Key words:*** *Altman's Z-score, DF model, Quick test, models of predicting bankruptcy proceedings*

**JEL:** *Q14, M21, G33*

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# Introduction

Agriculture is one of the most significant economic sectors in Serbia. Having in mind convenient geographic position of the country, its climate, as well as the high quality of the soil, this sector contributes to social and economic development of the country (Tankosić, Stojsavljević, 2012). Significant resources are required in order to exploit all the potential, conduct specialization in production, increase production efficiency and effectiveness using modern technologies (Maletić et al., 2011). During the last decade, significant funds were invested in the agricultural industry in Serbia. The total amount of investment in the agricultural sector exceeded $ 1 billion since 2000. Foreign companies have entered the Serbian market, mainly through acquisition and greenfield investments, particularly in the beverage sector, sugar, milk, meat industry (Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia, 2014).

Over 90 percent of the companies that do business in this sector have now switched to market economy. By this transition, the employers saw a great deal of significance in inspecting the various aspects of operating so as not to have companies become insolvent. The specifics that define the way in which business is carried out in agricultural companies is their seasonal character, slow turnover and high production costs (Jakšić et al., 2011). The mere beginning of the development of market economy is defined by the comparison of relevant indicators of value. However, a simple comparison of values did not produce accurate results, and neither was effective. With further development of the economy, and economic and mathematical models, different models for predicting bankruptcy of enterprises have been developed. According to Zenzerovic and Perusko (2006) the most commonly used models in practice for prediction of bankruptcy are: Beawer, Altman, Deakin, Ohlson, Edmistera, Zavregena and Kralíček.

The aim of this study is to explore which models of predicting bankruptcy proceedings are most suitable for companies in the agricultural sector.

# Literature review

The most used method in predicting the bankruptcy of the company was created as a result of Altman and other authors in the period from 1968 to 2002. The first paper on this topic (Altman, 1968) conducted research on a sample of companies of the US markets. He made a comparison of companies that have positive financial, as well as those that have been initiated bankruptcy proceedings. Observing twenty-two indicators that he considered to be of potential help, he set aside five standard ones that he included in his model with appropriate importance. Later, he has done a modification of the initial model, and formed models for companies whose shares are not traded on stock exchanges.

Beaver (1967) carried out research in the field of ratio analysis and the relations of bankruptcy classification. His univariate analysis based on a large number of bankruptcy indicators represents the starting point for multivariate attempts, both Beaver and for

other studies that followed. Beaver found that a number of indicators could discriminate between matched samples of failed and no failed firms for as long as five years prior to failure. Deakin (1972) in the latter study followed the same 14 variables that Beaver analyzed, but he applied them within a series of multivariate discriminant models.

Another famous prediction model was developed by Ohlson (1980). He published the paper where he indicated the shortcomings of MDA (Multivariate Discriminant Analysis) model and suggested logit analysis that avoids all the shortcomings of the previous model in the mentioned paper. The work was based on finding answers to the question: If given company belongs to a specific population, what is the probability of its bankruptcy? Therefore, the analysis without pre-defined probability of bankruptcy and without probability of distribution indicators. The analysis resulted with the creation of three models of predicting bankruptcy within the first year, predicting within the second year, if not in the first bankruptcy proceedings and bankruptcy prediction within a period of two years. It turned out that the first model has the highest probability of predictions, with the remark that the strength predictions of any model depends on the amount of information that we have.

After twenty-five years of developing Taffler models, Agarwal and Taffler (2007) provided a detailed study which involved a series of tests to prove the accuracy of the model for predicting bankruptcy. Detailed review of the Taffler model leads to the conclusion that the model accurately predicts failure in business. Also, the authors draw the attention to the fact that this model is useful for predicting the business of banks, rather than alternative companies. However, it is of great importance to interpret financial indicators correctly. Therefore, that is one thing that they agree with other authors.

Jakovčević and Andrašević (2011) published a paper about the indicators of problems in the functioning of industrial companies. In this paper, the authors provide a detailed overview of Altman's and Kralicek's models. They were assessed the overall state of observed companies testing on specific models listed industrial companies, whose shares are not traded on the stock exchange. A year later the same authors apply these models to predict the financial stability of agricultural companies.

Alihodžić (2013) in his paper also states that the models are extracted in the research, but its focus is directed towards Kralicek's DF test indicators, as well as the possibility of applying to the individual companies within the index BELEXline. In conclusion of the paper he stated that there are certain obstacles for application of the model to companies in Serbia, of which the most significant are performed unavailability of data and low training of researchers in the field of econometrics. Regarding to this Alihodžić (2013) notes that companies and financial institutions that the US financial markets were forced to bankruptcy, in Serbia continue to operate, in appreciation to the impact of inefficient financial and legal systems". Also, it is proposed as the best solution to combine financial indicators and models to predict the future of the company.

Muminović et al. (2011) tested the original Z-Score model and revised y-Score model for private companies in the Republic of Serbia. This study tested the ability to predict bankruptcy using the Z-Score model on a sample of Serbia. They concluded that the original Z-Score model cannot be successfully applied to domestic companies. Pavlović et al. (2011) find that Taffler's model cannot be applied to the companies in Serbia, which entitle the Taffler's assertion according to the specificity of the Z-Score model, therefore it can be applied only to companies which it was developed. Muminović et al. (2012) concluded that investing results in changing the financial position and profitability of a company, and the direction and intensity of any upcoming changes cannot be predicted by any model; especially, they could not be predicted by a model based on the discriminant analysis. Stanišić et al. (2013) deal with prediction of the probability of bankruptcy for the companies in Serbia. In a sample of 130 commercial companies they use the method of logistic regression, decision tree methods and artificial neural networks. Comparing the results with Altman's model, they concluded that the only model of neural network shows better results, which indicate that a vital form of bankruptcy prediction models for emerging markets with the characteristics of the recession, what is the market in Serbia.

In the case of the Czech Republic (Machek, 2014) examine in what percentage of Karlicek's Quick test, Taffler's model, IN99 and IN05 indexes of credibility, as well as Altman's model correctly predicted the bankruptcy of the company. It has been shown that the indexes of credibility and Altman's model provided the best results. This confirms the fact of the universality of application of the appropriate Altman's test. A good result of the credibility index was expected, since this model has been developed especially for the Czech market.

Smaranda (2014) developed a model based on logistic regression for which finds that most appropriate data composed of SMEs accounting ratios from a central-east European emerging economy. It is recommended that financial institutions well-assessment parameters from classical score and to review of financial ratios, especially in time of financial crises.

Recent years a great deal of attention was paid to the Kralicek's Quick test (Didenko et al., 2012). The Quick test is employed on Latvia's example in a study that evaluates the accuracy of bankruptcy prediction. The authors of this work deducted that the indicator election is rather important and that the prediction is 27 percent better in two years' time and 18 percent in three years' time if the calculations use the net money flow as opposed to the net money flow reduced by EBITDA.

Polo and Caca (2014) in the case of Albania test Quick test and provide a graphical representation of evaluation by 2010-2012. The study has shown that the greater the average value of the Quick test is, the lesser the total ability of payment. Due to the different factors involved in this review, the authors drew attention to the importance of the weightiness of each indicator for predicting crisis of the entire economic community.

## Methodology

Prediction of the problems in business operations initially relied on the observation values of individual financial indicators. The disadvantage of this type of analysis was the fact that was able to get individual indicators for independent problems. Striving to improvement of analysis has led to the comparison of the reference value, therefore there was a specific model for the evaluation of difficulty in the functioning of the company. With the increasing availability of information and data, as well as the rapid development of information technology has facilitated comparison of data, as well as determination of cause-effect relationships of one to the other indicators. A large number of papers have been published as a result of investigations of the issue by various authors. Through time these studies were constructing a large number of mathematical models which were aimed at predicting bankruptcy of companies.

This paper analyzes the application of the two most commonly used models: Altman's model, constructed on a sample of US companies, and Kralicek's model, constructed on a sample of European companies.

Edward I. Altman's model, designed in 1968, in the literature is known as the Altman's Z-score. The study included sixty six companies in the same industrial area, divided into two groups (Altman, 1968). The main aim of the research was to find a model that describes the difficulties in the business, and the prediction of corporate bankruptcy. Altman compared the group of companies that was already in bankruptcy, with a group at the time research continues to operate. The result of the research proved to be very significant. Method of multivariate discriminant analysis was tested the influence of parameters on the probability of occurrence bankruptcy. Of the twenty-two financial indicators, which is involved in the research, it turned out that only five describe properly company's operations. The final discriminating function is as follows:

$$Z = 1.2 \cdot X_1 + 1.4 \cdot X_2 + 3.3 \cdot X_3 + 0.6 \cdot X_4 + 1.0 \cdot X_5 \qquad (1)$$

whereby the major indicators are defined as follows:

$Z$ = the overall index, which also referred Z-score

$X_1$ = working capital/total assets

$X_2$ = retained earnings/total assets

$X_3$ = earnings before interest and taxes/total assets

$X_4$ = market value equity/book value of total debt

$X_5$ = sales/total assets.

The value of Z-score, calculated according to the formula above, was an indication of whether the company has difficulty in functioning or not. According to Altman, if the value of Z-score greater than 2.67 indicates that the company is financially stable and it is located in the white zone or "non-bankrupt sector". The area between 1.81 and 2.67, will be defined as the "zone of ignorance" or "gray zone", because the company

is financially vulnerable but there is potential for improvement of business. Hence, it is desirable to establish a guideline for classifying companies in the "gray area". While those firms having a Z-score below 1.81 are all bankrupt, which indicate "black areas".

This model has been established on a sample of companies whose shares were traded on stock exchange. There are a large number of companies whose shares are not traded on the stock exchange, therefore Altman has performed a modification of this model, in order to be adapted for other companies. Thus, the factor $X_4$ instead of the market value of equity for these companies uses the book value of capital and the value of the Z-score is calculated by the following formula:

$$Z' = 0.717 \cdot X_1 + 0.847 \cdot X_2 + 3.107 \cdot X_3 + 0.420 \cdot X_4 + 0.998 \cdot X_5 \qquad (2)$$

Amended the reference values are vulnerability and the company considered financially stable if Z' > 2.9. The potential for improved business operations have company with 1.23 < Z' < 2.9, while the risk of bankruptcy exists for companies with values of Z' below than 1.23. Furthermore, Altman performed another modification for non-production companies. The main difference is the exclusion of indicators $X_5$, since depending on the field of business, values of this factor can vary considerably. The new model forms:

$$Z'' = 6.56 \cdot X_1 + 3.26 \cdot X_2 + 6.72 \cdot X_3 + 1.05 \cdot X_4 \qquad (3)$$

where the lower and upper limits of the financial stability as follows 1.10 and 2.60.

Another method that we used for determining the probability of bankruptcy will be, as we have already mentioned, Kralicek's model. Following the example of Altman's idea, Kralicek was taken as a sample European companies and create a new discriminant function (Alihodžić, 2013). Kralicek's DF indicator is calculated using six indicators and may use positive and negative values. Value of Kralicek's DF indicator is calculated according to the formula:

$$DF = 1.5 \cdot X_1 + 0.08 \cdot X_2 + 10 \cdot X_3 + 5 \cdot X_4 + 0.3 \cdot X_5 + 0.1 \cdot X_6 \qquad (4)$$

Indicators that participate in this model are the following:

DF = the value of the discriminant function

$X_1$ = net cash flow/total liabilities

$X_2$ = total assets/total liabilities

$X_3$ = profit/total assets

$X_4$ = profit/operating income

$X_5$ = inventories/operating income

$X_6$ = operating income/total assets

Kralicek's DF indicator may have positive and negative values, where the negative point to the existence of insolvency, and positive on the solvency of monitored business entity. Insolvency starts when the DF indicator's value is in the 0.0-0.3 interval after which the zone of moderate insolvency commences for the DF indicator's values lesser than 0.0 and greater than -0.1 at which point the zone of extreme insolvency begins. Financial stability for the indicator values higher than 0.3-1.0 is rather bad and for the values from 1.0-1.5 financial stability is medium. With the business subjects that have a DF value between 1.5-2.2 the stability is good while up to 3 the stability is very good. All companies that possess a DF indicator above 3 are considered to be businesses with extraordinary financial stability (Alihodžić, 2013).

Depending on the value of the DF indicator, determines whether the company is solvent or not. Critical values point to the financial stability of the company are given by the following table.

**Table 1.** The values of Kralicek's DF indicator

| The values of DF indicator | Financial stability |
|---|---|
| >3.0 | Excellent |
| >2.2 | Very good |
| >1.5 | Good |
| >1.0 | Average |
| >0.3 | Bad |
| 0.3 | Beginning of insolvency |
| ≤0.0 | Moderate insolvency |
| ≤-1.0 | The striking insolvency |

*Source:* Alihodžić (2013)

Kralicek has formed another model whose purpose is based on minimal data in order to return the maximum information (Alihodžić, 2013). This test is known as the Quick test by Kralicek. The purpose of the model is evaluating the financial performance of companies, as well as the profitability of funds. The test involved four indicators that measure the risk of funding, liquidity, profitability and success. Each indicator is assigned a rating from 1 to 5 depending on the value, where 1 is the best rating. Indicators participating in the test are calculated as follows (Alihodžić, 2013):

$X_1$ = equity/total liabilities. Shows the share of capital in total liabilities. The recommended value of the indicator is 10% or higher.

$X_2$ = (total liabilities – cash)/(net profit + amortization). This indicator shows the time of debt repayment, i.e shows what the ratio between liabilities minus cash and profit is after tax, increased for amortization. If the value of this indicator is above 30 (years), it is deemed that the company has certain difficulties with solvency. It is advised that the value of this indicator should be 12 years or less.

$X_3$ = EBIT/total assets. This indicator shows profitability of total assets in respect to

operative gains. If the value of this indicator is negative, company has certain difficulties with solvency. It is advised that the value of this indicator should be 8% or higher.

$X_4$ = (net profit + amortization)/business earnings. If the value of this indicator is negative, company has certain difficulties with solvency. It is advised that value of this indicator should be 5% or higher.

The following table presents a method for assigning evaluation indicators.

**Table 2.** Assigning points of Kralicek's Quick test

| Indicator | Excellent 1 | Very good 2 | Good 3 | Bad 4 | Risk of Insolvency 5 |
|---|---|---|---|---|---|
| $X_1$ | > 30% | > 20% | > 10% | > 0% | Negative |
| $X_2$ | < 3 years | < 5 years | < 12 years | < 30 years | >30 years |
| $(X_1+X_2)/2$ | Financial stability | | | | |
| $X_3$ | >10% | > 8% | > 5% | > 0% | Negative |
| $X_4$ | > 15% | > 12% | > 8% | > 0% | Negative |
| $(X_3+X_4)/2$ | Total performance and profitability | | | | |
| $(X_1+X_2+X_3+X_4)/4$ | Total rating | | | | |

*Source:* Alihodžić (2013)

As we have presented in the table, the arithmetic average of the first two indicators represent an evaluation of the financial stability of the company, while the average value of the other two, are actually an indicator of the overall success and profitability.

## Results

The aim of this paper is to present which indicators point to problems in the company functioning. The methods that are described in the previous chapter are applied to companies which are operating in the Republic of Serbia. The research included five companies from the agricultural sector. The observed time period is from 2010 to 2013. The data that were used in the research were taken from the financial statements of companies in the agricultural sector which are available on the website of the Serbian Business Registers Agency. All results that are listed in the research are estimates of the authors.

As well as we described in the methodology, the research has begun with calculating Altman's Z-score. Given the fact that the research included only companies from agricultural sector, and that their shares are not traded on the stock exchange, for each of the companies accounted we value indicator Z'. The results that we obtained are given in the following table.

**Table 3.** Estimate of Altman's Z-score for the companies in the sample

| Company | The values of Z'- indicator | | | |
|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 |
| A | 1.52 | 1.99 | 1.72 | 1.75 |
| B | 0.32 | 0.37 | 0.26 | -0.01 |
| C | -0.05 | 0.39 | 0.80 | 0.49 |
| D | 2.33 | 2.16 | 2.06 | 0.49 |
| E | 1.20 | 0.94 | 1.12 | 0.16 |

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

On the graphical presentation of these indicators it is distinctly that none of the companies do not have financial stability. In the gray zone we notice a company A, whose value Z'-score has no significant changes. On the other hand, company D has a rapidly deteriorating in financial operations in 2013, and moves from the zone of indeterminacy in the zone of high probability of bankruptcy. The reason for this lies in the reduction of EBITDA, operating income. Z'-score values of other companies are positioned below the lower limit, the value of 1.23. At the same time, business activity is in the final year of research significantly decreases, and for these companies there is a risk of the bankruptcy.

**Graph 1.** Dynamics of Altman's Z-score for companies in the sample
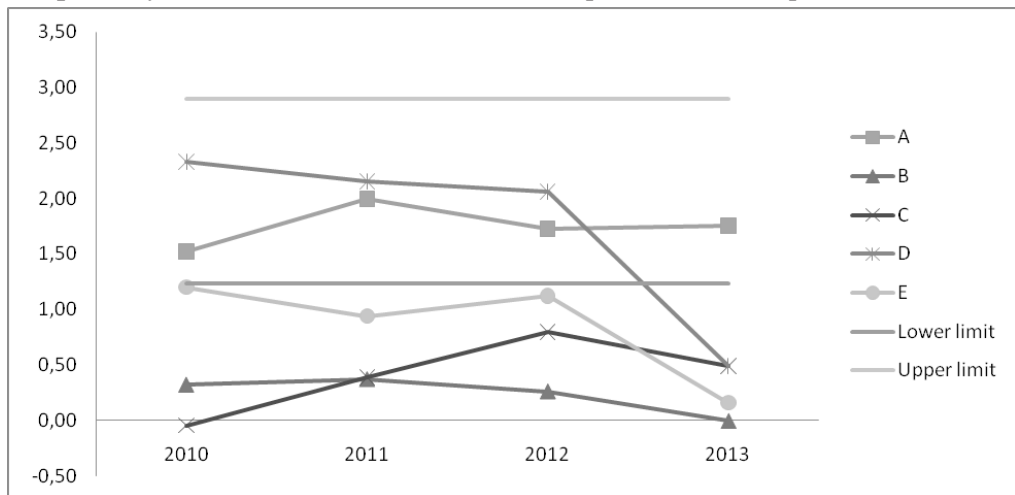


*Source:* Authors' calculation according to data from financial statements, Serbian Business Registers Agency (SBRA), http://www.apr.gov.rs

Values of Kralicek's functions discrimination give us a new evaluation of the financial situation. Based on the classification that we have mentioned in the methodology, the table of financial stability is as follows.

**Table 4.** Calculation of Kralicek's DF indicator for companies in the sample

| Company | The values of DF-indicator | | | |
| | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|
| A | 2.94 | 3.99 | 3.23 | 3.18 |
| | very good | excellent | excellent | excellent |
| B | 1.17 | 1.12 | 0.82 | 0.35 |
| | average | average | bad | bad |
| C | -0.08 | 0.06 | 0.42 | -0.1 |
| | moderate insolvency | beginning of insolvency | bad | moderate insolvency |
| D | 3.17 | 3.07 | 2.84 | 0.86 |
| | excellent | excellent | very good | bad |
| E | 1.87 | 1.46 | 1.7 | -1.21 |
| | good | average | good | the striking insolvency |

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

According to the results, we can conclude that the company A continuously has a good, moreover, strong financial stability, and with the results of Altman's test this company has the potential to transfer to a secure, white zone. On the other hand, company B is gradually losing financial stability. Companies C and E show great instability. They have positive developments in 2012, but in 2013 they have a drastic deterioration in the financial situation, moderate and extreme insolvency. Excellent results of company D has a significant decline in 2013, therefore the company exceeds the interval of bad financial stability. In the following graph are given representations of Kralicek's discrimination function for each company individually, as well as their positioning in relation to the limit values.

**Graph 2**. Dynamics of Kralicek's DF indicator for companies in the sample
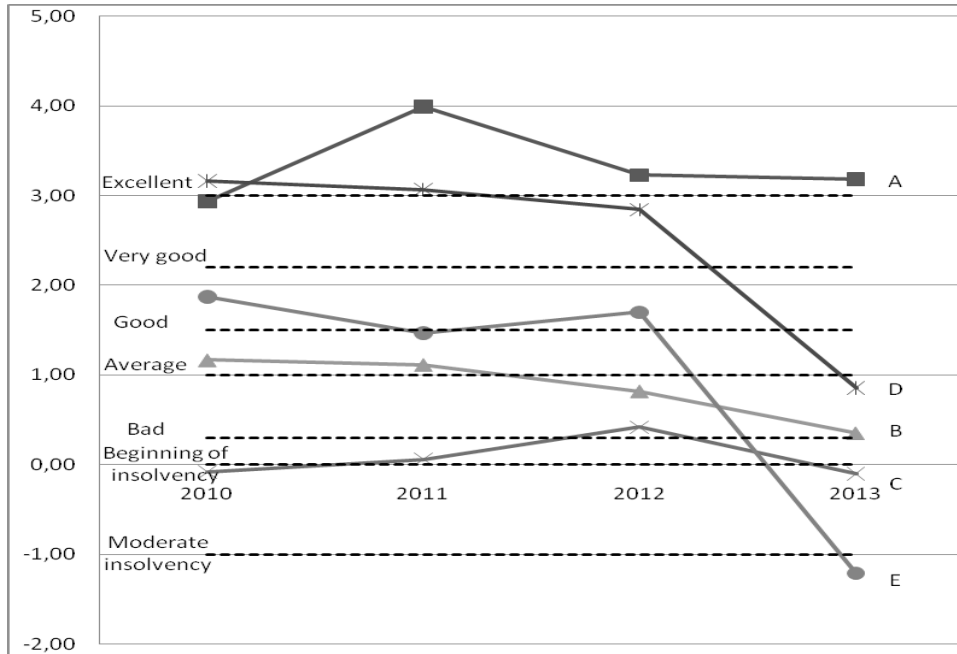


*Source:* Authors' calculation according to data from financial statements, Serbian Business Registers Agency (SBRA), http://www.apr.gov.rs

Kralicek's Quick test is a test of recent date. Values of four independent indicators, based on the table in the methodology, is assigned with rating from 1 to 5. A rating of 1 on this scale shows excellent behavior, while the worst score is 5. Based on the data that we have available for our companies, we calculated the value of the indicators, as well as their grades, where $P_i$ is the number of points which is at an appropriate value $X_i$ granted at the table from the methodology, for i = 1,2,3,4.

According to Kralicek, assessment of financial stability is an arithmetic mean of score of first two indicators, therefore in the column named $S_1$ we can find estimates of observed companies in the examined period. Column $S_2$ represents the arithmetic mean score of other two indicators and also represents total success and profitability. The arithmetic mean of value $S_1$ and $S_2$, respectively score of all four indicators, representing an overall assessment of the company for the year.

**Table 5.** Estimate of Kralicek's Quick test for the companies in the sample

| Company | | Indicators | | | | Point | | | | Score | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $P_1$ | $P_2$ | $P_3$ | $P_4$ | $S_1$ | $S_2$ | Total |
| A | 2010 | 0.50 | 13.00 | -0.04 | 0.03 | 1 | 4 | 5 | 4 | 2.5 | 4.5 | 3.5 |
| | 2011 | 0.67 | 11.91 | -0.01 | 0.02 | 1 | 3 | 5 | 4 | 2 | 4.5 | 3.25 |
| | 2012 | 0.63 | 22.25 | -0.01 | 0.02 | 1 | 4 | 5 | 4 | 2.5 | 4.5 | 3.5 |
| | 2013 | 0.58 | 25.85 | -0.02 | 0.01 | 1 | 4 | 5 | 4 | 2.5 | 4.5 | 3.5 |
| B | 2010 | 0.06 | 118.23 | 0.00 | 0.03 | 4 | 5 | 5 | 4 | 4.5 | 4.5 | 4.5 |
| | 2011 | 0.06 | 111.86 | 0.00 | 0.05 | 4 | 5 | 4 | 4 | 4.5 | 4 | 4.25 |
| | 2012 | 0.08 | 183.29 | -0.01 | 0.04 | 4 | 5 | 5 | 4 | 4.5 | 4.5 | 4.5 |
| | 2013 | 0.24 | 176.65 | -0.03 | 0.12 | 2 | 5 | 5 | 2 | 3.5 | 3.5 | 3.5 |
| C | 2010 | 0.55 | 43.67 | -0.04 | 0.42 | 1 | 5 | 5 | 1 | 3 | 3 | 3 |
| | 2011 | 0.59 | 50.29 | -0.03 | 0.31 | 1 | 5 | 5 | 1 | 3 | 3 | 3 |
| | 2012 | 0.60 | 80.54 | -0.01 | 0.18 | 1 | 5 | 5 | 1 | 3 | 3 | 3 |
| | 2013 | 0.61 | 89.98 | -0.03 | 0.31 | 1 | 5 | 5 | 1 | 3 | 3 | 3 |
| D | 2010 | 0.41 | 10.32 | 0.12 | 0.05 | 1 | 3 | 1 | 4 | 2 | 2.5 | 2.25 |
| | 2011 | 0.42 | 17.57 | 0.06 | 0.03 | 1 | 4 | 3 | 4 | 2.5 | 3.5 | 3 |
| | 2012 | 0.38 | 21.46 | 0.04 | 0.02 | 1 | 4 | 4 | 4 | 2.5 | 4 | 3.25 |
| | 2013 | 0.26 | 23.90 | -0.07 | 0.20 | 2 | 4 | 5 | 1 | 3 | 3 | 3 |
| E | 2010 | 0.33 | 76.51 | 0.02 | 0.02 | 1 | 5 | 4 | 4 | 3 | 4 | 3.5 |
| | 2011 | 0.30 | 77.22 | 0.00 | 0.03 | 2 | 5 | 5 | 4 | 3.5 | 4.5 | 4 |
| | 2012 | 0.24 | 83.69 | 0.04 | 0.02 | 2 | 5 | 4 | 4 | 3.5 | 4 | 3.75 |
| | 2013 | 0.12 | 87.37 | -0.12 | 0.36 | 3 | 5 | 5 | 1 | 4 | 3 | 3.5 |

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

Table 5 indicate that company A has a very good financial stability. Although the Altman's Z-score showed that company A is in the gray zone, Kralicek's DF indicator represents that the company is financially stable, but that there are problems with cost-effectiveness.

Company B has the worst overall ratings of all surveyed companies. In this company, we can notice that positive changes took place in 2013, when significantly increased the share of loans in total liabilities to 24%, in contrast to 2012 when the share was equal to 8%. Due to the sharp decline in operating income, an indicator $X_4$ is increased. Good reviews of these two indicators have contributed to improve the overall assessment of the company.

Company C has shown the same behavior in terms of all four factors for all four years. Indicators $X_1$ and $X_4$ are with excellent marks which indicate a high coefficient of own funding and a large proportion of cash flow in the business income. Value of indicators $X_2$ is growing through the years, therefore it indicates a long time of pay off debt. Negative values of indicators $X_3$ point to a negative percentage of profitability, consequently it is a

major reason for the poor financial position of the company.

For company D with this test we confirm once again that in 2013 has deteriorated business in terms of profitability and in terms of their own funding, and we can conclude that the company D estimates continuously declining, and that the situation in the company D through years is getting worse. The similar situation is in the company E.

It is interesting to note that the time pay off debt (column $P_2$) for all companies is more than 12 years, which indicates the high indebtedness of agricultural companies in Serbia. Also, from 2011 onwards the percentage of profitability of the total capital is less than 8%, moreover, in all companies in 2013 was negative. Companies B, D and E in the last year of the research show a significant improvement in the share of cash flow in the business income. This data indicates increasing business activities of the company, due to the inflow from operations, and greater financial stability. Results indicate that the cash flow is used to reduce short-term and long-term obligations, causing a gradual recovery of companies. Overall assessment of financial stability for the observed companies are relatively good, except for the company B, which has a poor financial situation and aims of insolvency.

For company A we notice increase of capital in relation to the liabilities. The reason for this is the increase in the revaluation reserves in liabilities and property in the assets of the observed companies. Therefore, we had an unrealistic view of the business and the value of assets in its possession. As a result of this there is a larger property taxes, resulting in a higher outflow of funds, a decline in the value of net profit margin and EBITDA.

Company C shows the trend of the impossibility of repayment obligations from its own resources as well as increasing the share of capital in total liabilities in revaluation reserves. Thereby, again we have unrealistic view of the assets of company, property in the assets and capital under liabilities. Therefore, cash flows show the realistic situation of the company. For company C is observed growth in net profit in total revenue on the basis of unrealistic basis, due to unjustified revenues as a consequence of not writing off bad debts.

Company A has a characteristic that its activity falls within the low cumulative branch. During these years we can see an increase in operating income and EBITDA as well. Besides production, company A has begun to deal with trade, and during these years secondary activity is expanding. The reason for that is the turnover cycle of cash, as well as faster time to collect receivables from the customers. Furthermore, the company used short-term funding sources in the financial market, which has further rise in price in production.

The capital increase for all surveyed companies has a common feature, which refers to the increase in the revaluation reserves, i.e. capital increase is not the result of an increase in profit or increase of the capital. The increase in revaluation reserves has no impact on cash flows, while increasing the capital has, since it represents the introduction of money. In this way we get a blurred image of the operations in all of the analyzed companies and we have no real relationship between owned and borrowed capital. If we exclude increase of the revaluation reserve, we would have seen that the ratio of owned and borrowed capital is the same as in the initial reporting year, which points to the unfavorable capital structure.

For company B we noticed a big decrease in operating income as a result of the economic crisis due to lack of funds in the market, as well as reduced demand for their products, and the weak purchasing power. Company B had increased participation in the capital, which was created by investing in other legal entities. The largest percentage share of fixed assets included stakes in subsidiaries, which makes it sensitive and dependent on business related legal entities.

The loss was a result of the decrease in operating income in the market and the fact that like other companies observed in this study did not perform the proposed measures to reconstruct the number of employees in the company, which would significantly impact on cost reduction. The fall in the cost of salaries is not accompanied by the decrease of operating income.

The lack of own capital, as well as high financial expenses resulted in a loss above the capital.

## Concluding remarks

Selected companies from the agricultural sector have certain characteristics that they share. Their financial reports indicate an increase in current assets, which is caused by unrealistic and uncollectible receivables, which are not written off and thus influenced the unrealistic picture of the company. Billing cycle for this company's range from 1 up to 4 years.

Companies have not their own capital, and consequently the property belongs to creditors. We imply high revaluation reserves, indicating that the company's assets is overvalued and that there was no assessed at fair value on the market conditions.

Cost of salaries are up to three times higher than operating income, because they do not approach the proposed measures to reconstruct the number of employees in the company, which would reduce costs.

High short-term liabilities of companies as well as unfavorable structure of short-term compared to the long-term liabilities, indicating that companies are mainly financed from costly short-term sources, i.e. production is financed by short-term assets (factoring, discounting bills of exchange) to further increase the cost of production process which results in an increase in financial expenses, which ultimately lead the company to a loss.

According to the Altman's Z-score model, in the case of surveyed companies, it is noted that none of the companies does not have a stable financial operations, except company A which is located in the gray zone of operations. The reason for these operations is a decrease in operating income and high financial expenses, the economic crisis, as well as the inability to collect receivables.

Using Kralicek model and observing the values of DF indicators of sample companies, we conclude that company A has a good financial stability, which with the observed results obtained with Altman's model, indicates that the company is heading towards recovery. The values of other companies point to the great instability in business and decline in value

in 2012, which are included in moderate or extreme insolvency. The results of these two models showed a very low probability that the observed companies in the next period would get out of financial and business instability. The values clearly indicate the possibility of a bankruptcy or entering the process of pre-pack reorganization plan.

Kralicek's Quick test indicates the indebtedness of agricultural companies in Serbia, as well as the low rate of profitability. Companies that have switched to secondary activity of business recorded growth in operating income due to the fact that the period of collection receivables is shorter. The mismatch of short-term and long-term liabilities and financing companies from costly short-term sources of funding have affected the increase in financial expenses, which in the end lead to the loss of the company and entering the zone of insolvency, which in the future lead to bankruptcy as the only certain solution.

Based on this research, the authors conclude that each of the applied tests gave different answers, as well as the conclusions about company business viewed from different angles. Therefore, the authors recommend that in analyzing the probability of bankruptcy always take into account indicators of different tests.

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# MODELI PREDVIĐANJA STEČAJNOG POSTUPKA POLJOPRIVREDNIH PREDUZEĆA U REPUBLICI SRBIJI[5]

*Danica Rajin[6], Danijela Milenković[7], Tijana Radojević[8]*

## Rezime

*Cilj ovog rada je prikazivanje različitih modela za predviđanje mogućnosti otvaranja stečajnog postupka u kompanijama u Srbiji, kao i istraživanje koji modeli su najpogodniji za kompanije iz sektora poljoprivrede. U radu su korišćena i prikazana tri modela: Altmanov Z-score model, Kralicekov DF model i Quick test. Ovom tematikom se bavilo dosta autora, međutim, većina njih je razvijala modele na razvijenim tržištima, koja se razlikuju od tržišta Srbije. Težnja ka unapređenju analize i predviđanja stečaja dovela je do upoređivanja referentnih vrednosti, da bi se na kraju došlo do konkretnih modela za procenu poteškoća u funkcionisanju preduzeća. S tim u vezi na uzorku od pet preduzeća koja posluju na teritoriji Republike Srbije, primenili smo tri modela koji koriste standardne finansijske pokazatelje za prikazivanje finansijskog stanja i stabilnosti preduzeća. Rezultati ukazuju da Kralicekov DF model ukazuje na bolje finansijsko stanje preduzeća nego što je ono prikazano Altmanovim Z-score modelom, upravo zbog karakteristika tržišta na kome je model formiran.*

***Ključne reči:*** *Altmanov Z-score, DF model, Quick test, modeli predviđanja stečaja*

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# SERBIAN AGRO-INDUSTRY-POTENTIALS AND PERSPECTIVES[1]

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## Summary

*This paper analyses agriculture and the food industry as dominant sectors of the Serbian agro industrial complex. The goal of the research is to stress the significance of the agro industry for economic development and the directions of its future development, as well as the significance of the agricultural and industrial policy for its development. For the purpose of a hypothesis the testing indicators of development, structural changes and work productivity will be analyzed. A correlation analysis is used to determine the character of dependence and the impact of the agriculture and food industry on key indicators of economic growth. The comparative method is used for a comparative analysis of the structural changes of Serbian agriculture as well as for some of the new EU member states. Research results show that new EU member states adapt the structure of their agriculture more efficiently to the new demands of development, resulting in the agro industry creating a greater added value which influences overall economic development. The great potential of the Serbian agro industrial complex could be a very good foundation for efficient agro industrial growth and an increase of competiveness on EU and Russia markets, as well as on numerous markets of other world countries, having in mind that overall demands for ecologically healthy food will grow rapidly in the following period.*

***Key words:*** *agriculture, food industry, agro industry, agro industrial policy, industrial policy.*

**JEL:** *Q10, L66, Q13, Q18, O25*

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## Introduction

Multiple and functional correlations of agriculture and the manufacturing industry indicate an interdependence and complexity of activities of the two sectors which the agro industry consists of. This connection is particularly important for developing countries with a low GDP per capita which forms up to 50% of the GDP as well as for industrial growth, nonagricultural activities and urbanization (FAO et al., 2008). The growth of agro industries of developing countries is intensified due to dynamic structural changes, obeying international standards of product and procedures safety and quality, as well as due to technological innovation and a vertical and horizontal integration level increase. Significant factors were also market liberalization and changes within the demand structure in developed countries, resulting in an increase of export as well as increasing competitiveness (Henson, Cranfield, 2009).

The share of agro industry within GDP, employment and foreign trade indicates the degree of dependence of one country from traditional sectors. The agro industry is intensive in resources (Upadhyaya, 2011) and heterogeneous on the level of industrial and technological intensity of raw materials processing due to progress in biotechnology (Wilkinson, Rocha, 2009; FAO, 2011).

The agro industry encompasses all activities starting from harvests, transformation, storing and preparation of agricultural raw materials for production or final consumption (Wohlmuth, Kormawa, 2012). The main focus is on production and food processing, but it should not be wrongly identified with the food industry, which is processing agricultural raw materials into food and beverages (FAO et al., 2008). Agro industry is consisted from sectors which process raw materials of agriculture, fisheries and forestry. It is a part of the agro business complex, which includes suppliers for agriculture, fisheries and forestry as well as distributors of food and non food products of the agro industry (Henson, Cranfield, 2009).

According to the *International Standard Industrial Classification* (ISIC), the agro industry consists of the following: 1) food and beverages, 2) tobacco products, 3) paper and wood products, 4) textile, shoes and clothes, 5) leather products, 6) rubber products (FAO, 1997). It is a complex and heterogeneous system which, besides food areas also encompasses non food areas as well as non-manufacturing activities and services.

This research paper accentuates the part of Serbian agro industry which includes the agricultural and food (agri-food) industry. Agro industry, together with related activities, participates by about 15.5% in the GDP production. The subject of this research paper is the analysis of multiple connections between agriculture and the food industry, as well as directions and the intensity of necessary structural changes, which are preconditions for an efficient growth of the agro industry, but also of the sustainable development of the overall economy.

The goal of this research is to stress the importance of the agro industry, the desirable paths of its future growth, but also the importance of agrarian and industrial policies in the development of this complex. In accordance with the subject and the goal, the paper starts

with the hypothesis that the ratio of participation of the food industry and agriculture within GDP is in a correlation with GDP per capita (GDPpc) and the human development index (HDI).

## Research methodology

Toward the goal of hypothesis testing, the development indicators and indicators of structural changes of agriculture and food industry are being considered. The production growth index is being analyzed but also the participation within GDP, gross value added (GVA) and employment. The structure of agricultural and food industry exporting is monitored according to the standard international trade classification (SITC). Agricultural work productivity is presented via a correlation of the total number of workers in agriculture and gross value added (GVA) of agriculture. The correlation analysis is used to determine the form and character of dependence between the achieved agricultural development level and food industry and elementary indicators of economic growth (GDPpc and HDI). For the comparative analysis of structural changes in agriculture and the food industry of Serbia, Bulgaria, Romania, Hungary, Czech Republic, Slovakia, Poland, Slovenia and Croatia, the comparative scientific method has been used, which application can contribute in defining future paths and guiding structural changes. The research is based on data analysis from publications and agricultural census data from 2012, done by the Republic Statistic Institute, Eurostat and United Nations Development Programme (UNDP).

## Agricultural potentials - limitations or opportunity for the development?

In Serbia during 2014, 3.5 million acres of agricultural soil which is approximately 65% of total land has been cultivated. The total agricultural land consists of plowed fields and gardens 74.3%, meadows and pastures 20.3%, and orchards and vineyards 5.4%. The structure of used land is being dominated by wheat cultivation (52%), while the share of industrial herbs is 10%, roughage 7% and vegetable plants is 4.5% (RZS, 2015a). It is estimated that annually over half a million acres of agricultural soil is not being cultivated (RZS, 2013). The scope and structure of accessible agricultural land provides a significant opportunity for growth and diversification of production.

Statistics show that on average, each Serbian citizen has/her at his disposal 0.47 acres of plowed fields, gardens and permanent plantings. Unfortunately, barely 2.8% of cultivated land has been irrigated (RZS, 2013).

**Table1.** Arable land, gardens and permanent crops in 2013.

| County | Per capita in hectares | Participation in agricultural land in % |
|---|---|---|
| Bulgaria | 0.43 | 66.2 |
| Czech R. | 0.23 | 72.8 |
| Croatia | 0.30 | 74.7 |
| Hungary | 0.45 | 85.9 |
| Poland | 0.30 | 78.2 |
| Romania | 0.44 | 68.1 |

| County | Per capita in hectares | Participation in agricultural land in % |
|---|---|---|
| Slovenia | 0.08 | 40.9 |
| Slovakia | 0.25 | 73.0 |
| **Serbia** | **0.47** | **79.7** |

Source: RZS, (2015a): Revision of time series of statistics of agriculture, Belgrade and Eurostat, (2015): Statistical databases, Agriculture, Luxembourg.

According to the number and average size of agricultural households (in acres and Euros), Serbia compared with the other eight examined countries is better only than Romania. Over 631,500 agricultural households (99.5% are individuals) is registered in Serbia, with the average size of estate of only 5.4 acres, most of which is made of small and mutually unconnected parcels. Households smaller than 5 acres amount to 78%, while the number of households larger than 50 acres amounts to less than 1% (RZS, 2013). The size of the households falls far behind, especially when compared to the Czech Republic, Slovakia and Bulgaria, resulting in the economical value of each household amounting to only 5,939 Euros. This is a consequence of the slow process of enlarging agricultural households and inadequate agrarian policies.

**Table 2.** The number and average size of farms in 2013.

| | Number of holdings | The average farm size (ha) | The average economic size of the farm (Euro) |
|---|---|---|---|
| Bulgaria | 254,410 | 18.3 | 13,111 |
| Czech R. | 22,860 | 152.4 | 168,513 |
| Croatia | 233,280 | 5.6 | 9,065 |
| Hungary | 576,810 | 8.1 | 9,086 |
| Poland | 1,429,010 | 10.1 | 15,254 |
| Romania | 3,859,040 | 3.4 | 2,700 |
| Slovenia | 72,380 | 6.7 | 13,943 |
| Slovakia | 23,570 | 80.7 | 76,887 |
| **Serbia** | **631,552** | **5.4** | **5,939** |

Source: RZS, (2015a): Revision of time series of statistics of agriculture, Belgrade and Eurostat, (2015): Statistical databases, Agriculture, Luxembourg.

The weak economic strength of households is also linked with low investments in new technologies and mechanization, which is long overdue. In 2012, 583,000 tractors and 31,200 of harvesters have been registered in Serbia, of which 95% is older than 10 years (RZS, 2013). A similar condition is observed when it comes to terminal equipment and other equipment. The state of the condition of the mechanization reflects on the economical viability and actual productivity of its usage, thereby impacting the competitiveness of households.

According to the most recent census, 40% of the population lives in rural areas, but nevertheless the process of migration and village withering is rapidly increasing. At

the same time, the number of agricultural households which have no active workers is increasing, while the average age of householders is 59 years (RZS, 2013).

## Industry capacities - choke points or potential for growth

The privatization in food industry has partially influenced the improvement of the conditions in particular branches. New owners have modernized their capacities, implementing quality and safety product standards when it comes to the areas of dairy, confectionery, milling and bakery and oil and sugar industries. The privatization and foreign investments have positively impacted the modernization of the capacities within brewery, beverage, water bottling and especially in the tobacco industry whose market is highly concentrated (Vuković et al., 2015). Unfortunately, during the privatization process the capacities for meat, fruit and vegetables processing have remained un-modernized, which has resulted in the low price competitiveness of those products.

Small enterprises dominate the food industry and the overall implemented capacities significantly exceed the current agricultural production and the size of the internal market, therefore they are being used less than 65% (MPZŽS, 2014) and in oil production barely around 40%. Those activities therefore show a low efficiency and price competitiveness, especially on EU markets.

Due to bad privatization and inefficient restructuring, the capacities for harvesters and tractor production have been ruined. A similar situation is found in mineral fertilizers, pesticides and seeds production. Most of the mechanization needs is being provided by the inputs from the import.

## Results of achieved agricultural development

Previous decades of agricultural development have been characterized by substantial oscillations in production and a modest growth of the actual scope of overall agricultural production. When compared to 2005, 2013 has presented an increase in crop production, and a slight reduction in livestock.

**Table 3.** Agricultural production indices (2005 = 100)

|  | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|
| Agriculture - total | 100 | 99.9 | 92 | 100.7 | 95.9 | 102.3 | 103.2 | 85.9 | 106.8 |
| Plant production | 100 | 97.4 | 89.6 | 110 | 118.9 | 119 | 117.9 | 90.3 | 121.5 |
| Livestock production | 100 | 97.4 | 97.8 | 92.0 | 84.4 | 92.4 | 94.9 | 101.9 | 99.4 |

Source: Author's calculations based on RZS, (2015b): Economic accounts of agriculture in the Republic of Serbia, 2007–2013, Beograd and RZS, (2010): Statistical yearbook of the Republic of Serbia, Agriculture, Belgrade.

Two thirds of the overall agricultural production value (67.8%) comes from crop production, livestock 29, 7% and agricultural services 2.5%. The crop production mostly consists from wheat 41.5%, fruits 15.5%, industrial plants 14%, vegetables and horticulture 115, wine and roughage 6.5%, potatoes 4.3% and others 0.2% (RZS, 2015b).

**Table 4.** Crop Production, 2005-2014.

| | Area at (000) hectares | | | Total yield at (000) tons | | |
|---|---|---|---|---|---|---|
| | 2005 | 2014 | change | 2005 | 2014 | change |
| Cereals (total) | 1,815 | 1,812 | -3 | 10,088 | 10,840 | +752 |
| Wheat | 630 | 604 | -26 | 2,523 | 2,387 | -136 |
| Corn | 1,005 | 1,058 | +53 | 7,085 | 7,952 | +867 |
| Oilseeds | 68 | 64 | -4 | 3,298 | 3,507 | +210 |
| Sugar beet | 331 | 339 | +9 | 4,020 | 4,594 | +574 |
| Tobacco | 6 | 5 | -1 | 9 | 9 | 0 |
| Potato | 59 | 52 | -7 | 970 | 592 | -378 |
| Vegetable | 81 | 70 | -11 | 1,040 | 920 | -120 |
| Roughage | 213 | 216 | +3 | 1,509 | 1,428 | -81 |
| Grapes | 26 | 21 | -5 | 150 | 122 | -27 |
| Fruit | 170 | 165 | -5 | 907 | 1,167 | +260 |

Source: RZS, (2015c): Statistical data base, Vegetable production, Belgrade. Available at http://webrzs.stat.gov.rs/WebSite/Default.aspx

Crop production significantly oscillates in overall sown areas and returns. The structure of agricultural cultures within the period between 2005-2014 shows an increase of the sown areas and overall returns of corn, oilseeds and roughage, and a reduction when it comes to all other cultures, except for fruits (increase of return of 260 thousand tons) (Table 4) (RZS, 2015c).

Between 2007 and 2013, in regards to the value of livestock production, livestock breeding participated with a share of 71%, while livestock products filled the rest with 29%. When it comes to livestock, pig breeding participated in average with 51%, cattle breeding 28%, poultry 135, and sheep and goat breeding with 8%. The milk whose production is constantly in a decrease starting from 2007 participated in the overall product value of livestock with 77% in average (RZS, 2015b).

Despite the existing beneficial conditions and capacities especially for cattle and sheep breeding, the share of livestock production in the overall agricultural production value is in a decline, mostly due to a continuation of the tendencies of reducing overall livestock, particularly the number of cattle heads. Livestock scores point out that in 2014, when compared to 2005, there is a reduction of the number of cattle and poultry heads, but an increase in the number of pigs and sheep.

**Table 5.** Livestock balance, growth of livestock and meat production, 2005-2014.

| | Livestock balance (000) tons | | | Increase in livestock (000) tons | | | Meat production (000) tons | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2005 | 2014 | Change | 2005 | 2014 | Change | 2005 | 2014 | Change |
| Cattle | 1,079 | 920 | -159 | 185 | 155 | -30 | 90 | 73 | -17 |
| Pigs | 3,212 | 3,236 | +24 | 447 | 400 | -47 | 253 | 258 | +5 |
| Sheep | 1,609 | 1,748 | +139 | 44 | 63 | +19 | 21 | 27 | +6 |
| Poultry | 17,905 | 17,167 | -738 | 95 | 121 | +26 | 67 | 94 | +27 |

Source: RZS, (2015d): Statistical data base, Cattle breeding, Belgrade. Available at http://webrzs.stat.gov.rs/WebSite/Default.aspx

A significant factor which impacts the state of crop production is the extreme weather and climatic events (Radović et al., 2015), insufficient irrigation and drainage, a poor application of agro technical measures, scarce specialization and inadequate production of chain unification, obsolete mechanization, a lack of training of farmers, as well as an inappropriate agar policy.

Besides an inadequate specialization and a poor connection between livestock and crop production, the crucial factor for the poor condition of livestock is bad privatization and a devastation of agribusiness, slaughterhouses and dairies, but also cooperative devastation. The number of households engaged in livestock production is rapidly being reduced. Cattle's breeding is in a bad state, which reduces meat and milk returns. There is a slightly better situation in poultry where huge households equipped with their own processing capacities dominate, which had a good impact on the growth of meat production.

## The influence of agriculture and food industry on economy growth

Serbian agriculture is characterized by a significantly larger share within the GDP (8.1%) and GVA (9.7%) when compared to the group of countries in question (below 5% of the GDP) (Table 6). All these countries went through substantially greater structural changes in agriculture, accompanied by an adequate agriculture policy. The common characteristics of these observed countries is either a fall or stagnation of the approximate participation of the agriculture in the GDP, but also a low or negative average growth rate of GVA, excluding Slovakia. Some of these trends can be explained by a negative influence of the global economic crisis.

**Table 6.** The role of agriculture in economic development (%)

| | Participation in GDP (%) | | Participation in GVA (%) | | The average growth rate of GVA (%) | Participation in employment (%) | |
|---|---|---|---|---|---|---|---|
| | 2014 | Change 2005-14 | 2014 | Change 2005-14 | 2005-14 | 2013 | Change 2005-14 |
| Bulgaria | 4.5 | -2.9 | 5.3 | -3.4 | -2.0 | 19.2 | -2.0 |

| | Participation in GDP (%) | | Participation in GVA (%) | | The average growth rate of GVA (%) | Participation in employment (%) | |
|---|---|---|---|---|---|---|---|
| | 2014 | Change 2005-14 | 2014 | Change 2005-14 | 2005-14 | 2013 | Change 2005-14 |
| Czech R. | 2.4 | +0.2 | 2.7 | +0.3 | -0.1 | 3.2 | -0.6 |
| Croatia | 3.5 | -0.7 | 4.1 | -0.9 | -2.4 | 13.2 | -3.2 |
| Hungary | 3.7 | 0.0 | 4.4 | +0.1 | +0.6 | 7.0 | -1.3 |
| Poland | 3.0 | +0.1 | 3.4 | +0.1 | +0.8 | 12.0 | -5.3 |
| Romania | 4.7 | -3.7 | 5.4 | -4.1 | +0.7 | 30.0 | -2.9 |
| Slovenia | 1.9 | -0.4 | 2.2 | -0.4 | -0.6 | 8.4 | -1.4 |
| Slovakia | 3.4 | +0.2 | 3.7 | +0.1 | +5.2 | 3.2 | -1.4 |
| **Serbia** | **8.1** | **-1.9** | **9.7** | **-2.3** | **+0.3** | **21.3** | **-2.0** |

Source: Calculation of authors based on RZS, (2015a): Revision of time series of statistics of agriculture, Belgrade and Eurostat, (2015): Statistical databases, Agriculture, Luxembourg.

Besides a decrease of 2%, Serbian agriculture participates greatly in overall employment (21.3%), which is 6.5 times greater than that of the Czech Republic and Slovakia. Such a participation is also shown by Romania – 30%, Bulgaria – 19.2%, Croatia – 13.2% and Poland – 12%. Besides a historical heritage and natural conditions, this is also a consequence of the deindustrializing of the economy and the devastation of the industry. The 2013 data shows that there were more employees in agriculture than in industry, which is illustratively indicative of the degree and character of Serbian economical development.

The intensity of structural changes influences the productivity and competitiveness of the Serbian agriculture. Price competitiveness exists only in herbal production. Work productivity of our agriculture is better only than the agriculture of Poland. The added value per employee in Serbian agriculture is 30 times lower than Slovenian, and 4.3 times smaller than the EU average (Graph 1). In order to increase work productivity in Serbian agriculture, new investments are required as well as a faster modernization of the agricultural production, a more dynamic development of livestock opposed to husbandry, but also letting go of surplus workers in agriculture.

**Graph 1.** GVA per worker in 2013. (constant 2005 USD)
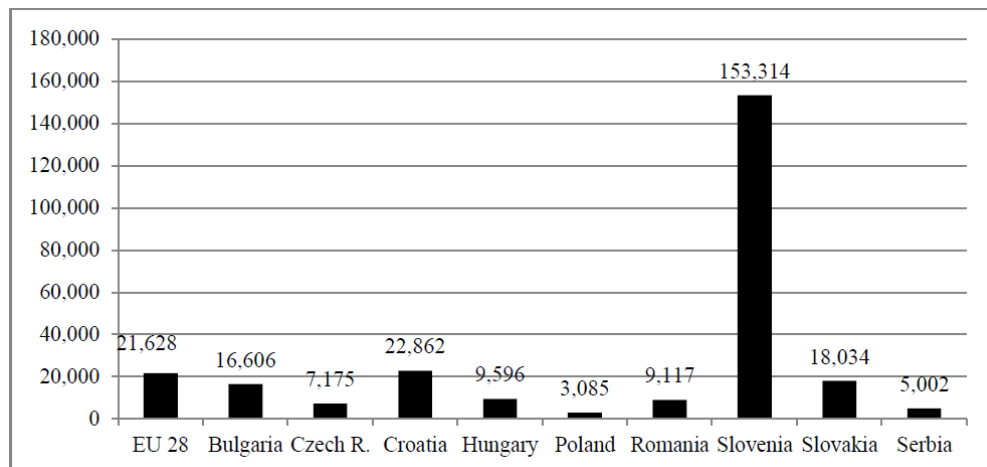


Source: RZS, (2015a): Revision of time series of statistics of agriculture, Belgrade and Eurostat, (2015): Statistical databases, Agriculture, Luxembourg.

In 2014, food industry participated with 4.4% in the Serbian GDP, and with 4.6% in the gross added value (GVA), which is an insignificant increase dating from 2005. A higher participation of GDP than Serbia is enjoyed by Romania, Bulgaria and Poland, but only Romania in GVA. The importance of the food industry for Serbia is additionally confirmed by the dominant share of 32.7% in the overall GVA of the manufacturing sector. Serbian food industry employees amount up to 4.6% of the total employees, which is significantly higher when compared to the countries under analysis.

**Table 7.** The role of the food industry in economic development

|  | % in GDP | | % in GVA | | % GVA in manufacturing | | % in employment | |
|---|---|---|---|---|---|---|---|---|
|  | 2012 | Change 2005-12 | 2012 | Change 2005-12 | 2012 | Change 2005-12 | 2012 | Change 2005-12 |
| Bulgaria | 6.6 | +1.0 | 3.8 | +0.7 | 20.6 | +3.6 | 3.4 | -0.3 |
| Czech R. | 3.5 | -0.8 | 2.4 | -0.6 | 10.3 | -0.2 | 2.5 | -0.4 |
| Croatia | ... | ... | ... | ... | ... | ... | ... | ... |
| Hungary | 4.9 | 0.0 | 2.2 | -0.5 | 9.9 | -1.9 | 3.0 | +0.3 |
| Austria | 3.2 | +0.1 | 1.9 | -0.1 | 10.6 | +1.5 | 1.9 | -0.2 |
| Poland | 6.3 | -0.3 | 2.3 | +0.2 | 18.2 | -5.1 | 3.3 | +0.2 |
| Romania | 6.7 | -1.7 | 6.1 | -0.7 | 14.4 | -0.9 | 2.3 | -0.1 |
| Slovenia | 2.6 | -0.4 | 1.5 | -0.4 | 7.3 | -0.5 | 1.7 | -0.5 |
| Slovakia | 2.3 | -1.0 | 1.7 | -0.5 | 9.6 | +2.4 | 2.0 | -0.5 |
| **Serbia** | **4.4** | **+0.1** | **4.7** | **+0.1** | **32.7** | **+1.4** | **4.6** | **-1.6** |

Source: RZS, (2015a): Revision of time series of statistics of agriculture, Belgrade and Eurostat, (2015): Statistical databases, Agriculture, Luxembourg.

Agriculture and the food industry jointly create around 12.5% of the GDP. The remaining areas of the agro industry according to ISIC create an additional 3% of the GDP. Due to sufficient demand on the domestic market, a significant amount of agro industrial production has been exported. The export structure records a high score of 18.6% for food, livestock, beverages and tobacco, while the import is about 7%. Compared to the export of the analyzed countries, these products scoreless, particularly in the Czech Republic, Slovakia and Slovenia, which is in line with their real sector production structure (Graph 2).

**Graph 2.** Food exports (% of exports of goods)
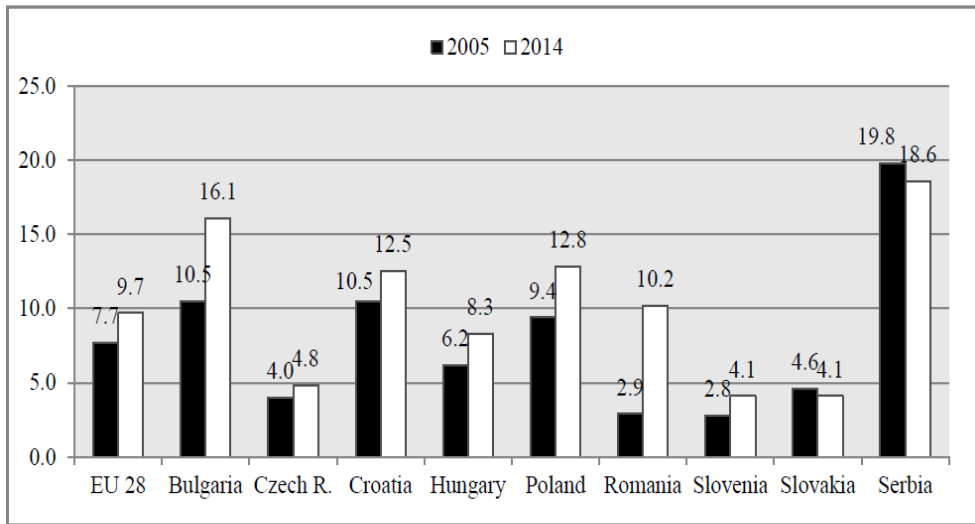


Source: RZS, (2015a): Revision of time series of statistics of agriculture, Belgrade and Eurostat, (2015): Statistical databases, Agriculture, Luxembourg.

The ratio of the participation of the food industry and agriculture in GDP or in GVA indicates the contribution of these activities to economical growth. The higher the country is at the industrialization level, the greater the ratio is, and vice versa (Wilkinson, Rocha, 2009). Serbia's food industry contributes less to GDP when compared to primary agricultural production, which is not the case with other observed countries (excluding Slovakia).

**Table 8.** Ratios of the food industry and agriculture, 2012 and 2005th

|          | GDP  |      | GVA  |      |
|----------|------|------|------|------|
|          | 2012 | 2005 | 2012 | 2005 |
| Bulgaria | 1.40 | 0.76 | 0.70 | 0.36 |
| Czech R. | 1.46 | 1.95 | 0.92 | 1.25 |
| Hungary  | 1.29 | 1.32 | 0.49 | 0.63 |
| Poland   | 2.25 | 2.28 | 0.72 | 0.64 |
| Romania  | 1.43 | 1.00 | 1.15 | 0.72 |

| | | | | |
|---|---|---|---|---|
| Slovenia | 1.37 | 1.30 | 0.68 | 0.73 |
| Slovakia | 0.70 | 1.03 | 0.47 | 0.61 |
| Serbia | 0.59 | 0.45 | 0.52 | 0.38 |

*Source:* Author's calculations based on Table 7 and 8.

Also, if we observe the GVA, a similar situation of the ratio of these two activities is also applied. A review of the analyzed countries shows a growth of this ratio in Bulgaria, Romania and Poland, and a decrease in the Czech Republic, Hungary, Slovenia and Slovakia. At the same time, these four countries have the highest level of agricultural work production, as well as the most dedicated manufacturing sector in which propulsive areas of an average-high and an average-low technological intensity dominate.

In developing countries, there is a strong synergy between the highly developed agribusiness, the economy's growth and poverty reduction. The low HDI is the consequence of inefficient development of the agro business (Wilkinson, Rocha, 2009). By applying the Pearson coefficient, the correlation analysis shows that a higher coefficient of correlation between GDPpc and the food industry and a agricultural participation ratio within GDP is typical for those countries with lower GDPpc (Serbia and Bulgaria), or an increasing agricultural and food industry participation ratio in GDP (Poland and Romania). The remaining countries (Slovenia, the Czech Republic, Hungary and Slovakia) show a weak or inverse correlation.

Almost the exact results of correlation analysis have been reached when examining the correlation of HDI (UNDP, 2014) and food industry and the agricultural participation ratio in GDP (Table 8). Thus the hypothesis that less developed countries such as Serbia, which possesses a higher food industry and agricultural participation ratio in GDP, and therefore has a greater correlation with the GDPpc and HDI, is confirmed.

**Table 9.** Pearson correlation coefficient, the 2005-2012 period.

| | GDP ratio of participation of the food industry and agriculture | HDI and Ratios food industry and agriculture |
|---|---|---|
| Bulgaria | 0.678** | 0.818** |
| Czech R. | -0.259** | -0.238** |
| Hungary | -0.533** | 0.142** |
| Poland | 0.873* | 0.851* |
| Romania | 0.468** | 0.413** |
| Slovenia | 0.446** | 0.280** |
| Slovakia | -0.867* | -0.753** |
| Serbia | 0.632** | 0.620** |

* Correlation is significant at the 0.01; ** Correlation is significant at the 0.05 level (2-tailed) level (2-tailed).

*Source:* Author's calculations

### Can the agro industry be the backbone of Serbian industrial development?

The high participation of the agro industry in GDP, employment and exporting indicates that it provides a significant contribution to Serbia's overall economical development. It would be even greater if there was an overall and efficient connectivity in the production chain, which encompasses producers, manufacturers, financiers and exporters.

In order for the development of the agro industry to be efficient, there are some necessary structural changes in agriculture and the food industry which are required. Although they are time consuming and financially demanding, the practice shows that they are manageable, but with an inadequate support of agrarian and industrial policies.

A more intensive and more modernized agriculture would expand the scope and quality of production. In order to achieve this, it is necessary to perform and apply contemporary standards and security and quality process control, as well as the transfer of newest knowledge, technologies and innovation, which is a precondition for an effective alignment of Serbian agricultural policies toward demands and the principles of the Common Agrarian Policy of the EU (CAP), and especially the goals of rural development policy (Đurić, Njegovan, 2015).

The primary aim of agrarian policy are changes of a structural nature in increasing the intensity of agricultural production, i.e. increasing the productivity and economic strength of households, therefore allowing the quality of life for the agricultural and rural population to improve. Measures must be compatible with those of CAP (Popović, Grujić, 2015) which assume less direct help and subventions, and more indirect encouragement of investments and sustainable rural development.

Implementing these measures requires a significant increase of budget funding and a greater exploitation of EU agricultural and rural development help funds. That must be followed by strengthening of institutions, infrastructural development, increasing the size of households, mechanization and equipment modernization and training of agricultural workers.

The agrarian policy should be harmonized with the industrial policy, thus impacting a more efficient development of the food industry and exporting. Modernization and better capacity exploitation, strengthening the ties between raw materials manufacturers and processors, and production diversification significantly increase the comparative advantages of agriculture, food self reliability and the overall supply of meat, milk fruit and vegetables.

Export increase requires a production of higher added value competitive products, based upon knowledge and technological innovations that will respond in size, quality, standards and safety demands on products and processes for foreign market needs, particularly the EU food market is still highly protected from foreign competition (Marković, Marković, 2014) and it is burdened with a significant surplus of food.

An important role in the implementation of industrial policies should be held by tax incentives, which should stimulate investments and food industry capacity development and raise the primary products processing level. Subventions should be applied in alignment

with the already established principles and goals such are production growth, new job creation, a positive export effect or modernization and purchase of modern technology.

In order for the agrarian and industrial policy to be more efficient, the state should provide security and certainty of agricultural product placement, a healthy business environment, favorable and stable sources of financing and their efficient allocation for promoting production and export. These policies must set clearly defined goals, instruments and accessible means, and leaders as well as very precise method of evaluating their realization.

## Conclusion

Serbia is an agrarian country which does uses insufficiently its comparative advantages and natural potentials. The high share of agriculture within the GDP and in employment is the result of favorable environmental conditions and historical heritage, deindustrialization, as well as slow reforms in agriculture, which fail to provide a reallocation of the work force into other sectors. The Serbian agriculture is characterized by extensiveness and a low work productivity, which promptly requires efficient structural changes as a precondition for intensive production and agricultural development. During the privatization period, many food industry factories were closed, and some which managed to survive the Serbian transition insufficiently explore the disposable capacities.

Agriculture and the food industry creates approximately 12.5% of the GDP and participates with 25% in overall employment, which strongly marks Serbian industry as agricultural. The participation of the food industry, beverages and tobacco which is also 1/3 of GVA of the manufacturing sector points to the significance of these areas for overall industry and economy development.

Correlation analyses show that Serbia, as developing country, has a higher correlation coefficient between the food industry and agricultural participation ratio in GDP on one hand, and GDPpc and HDI on the other, which means that the state and the condition of the development of the food industry and agriculture is in a correlation with the basic indicators of economical growth.

The scientific contribution of this paper lies in a critical examination of the results of agriculture and food industry development as the biggest shares of the complex of the Serbian agro industry, as well as to mark the potentials and perspectives of its future growth toward more propulsive areas, in order to put in use the comparative advantages of agriculture. The paper has a practical approach and it could be of use for decision makers and bearers of agrarian and industrial policies.

Due to methodological differences within the previous two statistical censuses, some data is not comparable, therefore excluding an analysis of complex indicators of structural changes and agro industry development, particularly during a longer time span. For future exploration, a focus should be made toward an interdependence of the comparative advantages of agriculture, and changes in the food industry production structure, toward the goal of creating higher added value products and export growth.

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# AGROINDUSTRIJA SRBIJE – POTENCIJALI I PERSPEKTIVE[5]

*Ljubodrag Savić[6], Gorica Bošković[7], Vladimir Mićić[8],*

## Apstrakt

*U radu se anliziraju poljoprivreda i prehrambena industrija kao dominantni sektori kompleksa agroindustrije Srbije. Cilj istraživanja je da ukaže na značaj agroindustrije u privrednom razvoju i pravce njenog budućeg razvoja, kao i na mesto agrarne i industrijske politike u njenom razvoju. U cilju testiranja hipoteza analiziraće se pokazatelji razvoja, strukturnih promena i produktivnosti rada. Korelaciona analiza koristi se za utvrđivanje prirode povezanosti i uticaja poljoprivrede i prehrambene industrije na ključne indikatore ekonomskog razvoja. Za uporednu analizu strukturnih promena poljoprivrede Srbije i nekih od novih* članica *EU primenjen je komparativni metod. Rezultati istraživanja pokazuju da nove* članice *EU efikasnije prilagođavaju strukturu poljoprivrede novim zahtevima razvoja, zbog* čega *agroindustrija stvara veću dodatu vrednost, značajno utičući na ukupan privredni razvoj. Veliki potencijali agro-industrijskog kompleksa Srbije, mogu biti veoma dobra osnova za efikasan razvoj agroindustrije i povećanje konkurentnosti na tržištima EU, Rusije, ali i brojnih drugih zemalja sveta, imajući u vidu da* će *ukupna tražnja za ekološki zdravom hranom ubrzano rasti u narednom periodu.*

***Ključne reči:*** *poljoprivreda, prehrambena industrija, agroindustrija, agrarna politika, industrijska politika*

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# CAUSES OF DIFFERENT PROFITABILITY OF AGRICULTURAL SECTOR

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## Summary

*This work involves identification of causes of different profitability of agricultural sector done on case study of nearly identical agricultural enterprises. It shows that financial mix even in scope of similar companies can lead to various profit indicators. Through comparative financial analysis in the same industry and activity by applying methods and techniques we have concluded that company PP Ratkovo operates more stable and closer to determined norms and also shows better results in majority of the indicators. Horizontal and vertical analysis indicates that companies in Agribusiness partner group use expensive external sources of financing. We have precisely defined in which cost segment occurs highest distinction. Also we have shown reasons why PP Ratkovo in the last two years manifests great profitability measured by ebit, ebitda and net profit as well as excellent structure of material costs and wages costs in in frame of the operating income, and reasons why enterprises in Agribusiness partner group does not.*

*Key words: Profitability, Agricultural sector, Financial analysis*

*JEL: Q14*

## Introduction

Determine the reasons of diverse profitability of similar agricultural enterprises primary agricultural production filed in APR under the group 0111 Cultivation of wheat (except rice), legumes and oilseeds, medium size, which have similar arable land and which operate on same limited geographic area. **PP Sombor ad** area 1600 hectare, Bački Brestovac, **PP Vojvodina ad** 1400 hectare, Srpski Miletić, **PP Miletić ad** 1400 hectare, Feketić **PP Feketić ad** 1050 hectare, which are enterprises of one owner and Ratkovo, **PP Ratkovo doo** 2000 hectare, which is enterprise of other owner. Many authors claim that diversity is among the most important predictors of a company's sales revenue, customer numbers and profitability. On the other side, in the primary agricultural

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sector is difficult to create and maintain diversity, due to its very specific characteristic. Primary agriculture and agriculture in general, is inflexible, supply is inelastic in the short run, supply is influenced by weather (climate conditions), risk is significant, and access to financial services is limited (due to insufficient collateral, in most cases). In that context, identification of the reasons and consequences of diverse profitability in this sector is that what makes this research a challenge.

Research goal is to show through comparative analysis of financial results presented in Balance Sheet and Income Statement problems and ways of noticing problem as well as overcome them in enterprises which financial indicators deviate from the prescribed and recognized norms, or indicators of other similar enterprises. When comparing changes in the company's ratios from period to period, we can point improvements in performance or developing problem areas. In that context, we define assumptions for better and more successful business implementation and profit increase as one of the basic category in modern business. In our research we have also given conclusions which can achieve that. Considering definition of the problem and research goal for starting hypothesis we are taking that each enterprise which has negative results in their financial reports compared to the prescribed and recognized norms or other enterprises definitely has disorder in financial flows which reflects on overall success (or failure) of the enterprise. By locating those problems we can improve financial results of the business that operate below the average.

H1 (general hypothesis): Financial analysis is an important part of the decision making process in agriculture.

H2 (partial hypothesis): Interpretation of the results of financial analysis is only possible in the proper context (it is necessary to take into account the specific characteristics of agriculture).

H3 (partial hypothesis): Financial analysis in agriculture has limits - simply manipulation of historical data can hide the actual state of the agricultural company.

During research we have used methods of analysis, methods of synthesis, statistical methods and case study. Foundation of our research is based on method of partition and comparison. We have dismembered sheets of given enterprises on basic categories which we observed in timeline of 5 previous years and compared indicators in that period. Method of comparison which we used is based on comparison of four very similar enterprises of single owner with the enterprise of another owner. All enterprises have similar characteristic of agricultural goods, and all were privatized in same period in similar way; thus we have unified material with representable comparison of all financial indicators. We have done individual analysis of mentioned enterprises in various time periods and compared group of one owner (organized as joint-stock company) with the enterprise of the other owner (organized as Limited Liability Company).

Using acknowledged analysis of the financial reports, which are basically functional relations between positions in Balance Sheet and Income Statement, we explore

financial – economic condition and results in given enterprise.

Through parallel analysis of these enterprises, we have established what the real size of their assets is, in which way is company securing financing those assets and its profitability; to what degree of business and financial risk are companies exposed to; indicate future of the enterprises and recommendations to managers, owner, business partners and banks and what they can expect from each company. We have at our disposal financial data of these 5 companies from last 5 years.

## Methodology and Data Sources

Literature review **-** As agricultural businesses today are becoming more complex, management needs to consider how its financial ratios play an important part in the health of its business. Financial analysis is an activity that includes the association between various accounts in financial statements as well as their measurement and interpretation (Sharifi, 2013).

There is no "universal" best methodology of the assessment of the economic viability of agricultural holdings. However, a combination of methodologies would result in a more efficient assessment of the economic viability of agricultural holdings, as that would include financial (Return on Equity, Material Investment, Cost, Subsidy, and Debt) and non-financial (Production Cost and Performance) indicators (Slavickiene, Savickiene, 2014).

The increased labor shortage and reduced profitability are growing concerns to the agricultural enterprises. Farm size is having positive association with the hired labor use and farm mechanization, but having negative association with family labor (Amarender, 2013). Some studies find that key drivers of net profit margins are education, farm size and typology, specialization, and level of government payments. Key factors affecting the asset turnover ratio component of the Du Pont model are age, contracting, specialization, and receiving government payments.

Key factors affecting asset-to-equity ratio component of the Du Pont model are farm size, farm typology, contracting, and specialization drive asset-to-equity ratio (Detre, Mishra, 2012). Profitability change can be decomposed into the product of total factor productivity (TFP) index and an index measuring changes in relative prices. Many TFP indexes can be further decomposed into measures of technical change, technical efficiency change, scale efficiency change and mix efficiency change (O'Donnell. 2012).

Returns on assets (ROA), a measure of financial performance widely used in the farm management literature, is the ratio of net farm income plus interest payment to total assets. ROA is widely hypothesized to be a function of farm's characteristics and management strategies used to manage the farm. Results from several studies show that although there is an inverted U-shaped relationship between age of the operator and financial performance, management strategies such as increasing the number of decision makers, engaging in value-added farming, and having a written business plan

can lead to higher financial performance (Mishra, Wilson, Williams, 2009).

The results from some studies show that older farmers and larger farms are less likely to experience financial stress while hobby farms and livestock farms are more likely to experience financial stress. These results for beginning farmers indicate fewer significant effects (Katchova, 2010). The most significant determinants of financial stress are farmer's age, size of operation, ownership, year of operation, and farm type (D'Antoni, Mishra, Chintawar, 2009).

For the past decades, Serbian agriculture cannot keep pace with the agricultural development of the developed West European countries- neither in technical/technological, nor organizational aspect. The same can be said of its overall efficacy and productivity. Consequences of a long-term disinvestment in the agricultural sector are more pronounced than ever (Babović, Veselinović, 2010). In the national economy clusters have been recognized as an instrument for strengthening productivity and innovation in small and medium Enterprises, as well as an instrument for regional development starting from 2005. Some researches show that clusters in Serbia were unable to develop until middle of 2013. They still possess low operative, innovative and export capacities, and there is a lack of key contributions of clusters to creating a unique regional specialization of labor and knowledge, as well as increasing regional competitiveness. In the future, cluster development in agribusiness will be directly related to the creation of a favorable business environment for SMEs, stimulating and predictable agricultural policy, as well as developed entrepreneurial initiatives aimed at joint activities and cooperation (Paraušić, Cvijanović, Mihailović, 2013).

Observing the current situation, credit support to the agriculture of Serbia through the banking sector is extremely unfavorable. Average active interest rates in Serbia are considerable higher than average active interest rates in the European Union and neighboring countries. Especially in times of global crisis, it is extremely important to provide more favorable credit conditions and thus stimulate taking loans for investments in agriculture. On the other hand, financial support to agriculture through the agrarian budget, even under more favorable credit conditions, is not enough for self-sustainability.

Lack of financial resources is a key limiting factor of the efficient utilization of agricultural resources - in transitional countries and developed ones alike. Despite the rich tradition and natural resources, the agriculture of Serbia is financially incapable of investing in new technologies, equipment, knowledge and innovations and, consequently, its competitiveness is seriously impaired, not only in international but domestic market as well. Surely, financial mix in the sector of agriculture is significantly different from the financial mix in other industries, due to certain specificities (Veselinović, Drobnjaković, 2014). The last step in ratio analysis is drawing conclusions about causes and consequences of liquidity "dry-ups", extreme liquidity, peak profitability, bottom-line profitability, slow and accelerated turnovers, and other aspect of "pyramid of financial indicators" (Malešević, 2013).

According to some authors, the sensitivity analysis shows that the agricultural productivity is responsive to the increase of total operating costs, the decrease in average price, the decrease in total production, as well to the increase in the discount rate. Consequently, farmers should improve their equipment and allocate rationally the inputs to improve the profitability of agricultural investments (Maniriho, Bizoza, 2013).

## Financial report analysis

In our financial analysis, we have used common methods and techniques for analyzing, namely: horizontal analysis, vertical analysis, ratio analysis, analysis of net working capital, debt ration analysis. Material assumptions of analyzes are based on providing usable data of the financial statements. Only usable financial statements are those which are free of bias and offer adequate basis for financial analysis. The accounting analysis is the analysis of historical data that financial analysis puts in relations to assess future trends in the company and ability to generate money.

It's important to determine:

1. Actual value of assets, that is, how much of Land, Building and Equipment actually belongs to owners and how much is still funded by another's resources.
2. Are company assets generating profit.
3. Is company exposed to financial risk in business.
4. Direct influences on enterprise profit as one of the basic tenets of its operations.

## Horizontal analysis

In our research, we have conducted a comparative horizontal analysis of these enterprises basic categories of balance sheet and income statement for the past 5 years with special reference to the indicators for years 2012 and 2013.

**Table 1.** Horizontal and vertical analysis of assets of the balance sheet

| ASSETS | | 2009 | Vertical analysis | 2012 | Vertical analysis | 2013 | Vertical analysis | Horizontal analysis (2012/13) |
|---|---|---|---|---|---|---|---|---|
| PP RATKOVO | fixed assets | 1.058.252 | 84,4 % | 1.140.432 | 73,1 % | 1.113.858 | 67,5 % | -26.574 (-2%) |
| | current assets | 182.808 | 14,6 % | 377.436 | 24,2 % | 502.588 | 30,4 % | 125.152 (33%) |
| | total assets | 1.253.371 | 100% | 1.559.760 | 100 % | 1.650.319 | 100 % | 90.559 (6%) |
| PP MILETIĆ | fixed assets | 336.015 | 61,6 % | 346.383 | 42,3 % | 335.460 | 43,6 % | -10.923 (-3%) |
| | current assets | 209.530 | 38,4 % | 473.244 | 57,7 % | 434.787 | 56,4 % | -38.457 (-8%) |
| | total assets | 545.545 | 100% | 819.627 | 100 % | 770.247 | 100 % | -49.380 (-6%) |
| PP FEKETIĆ | fixed assets | 521.994 | 70,7 % | 419.333 | 56,2 % | 420.014 | 57,5 % | 681 (0%) |
| | current assets | 216.164 | 29,3 % | 326.942 | 43,8 % | 310.524 | 42,5 % | -16.418 (-5%) |
| | total assets | 738.158 | 100% | 746.275 | 100 % | 730.538 | 100 % | -15.737 (-2%) |
| PP SOMBOR | fixed assets | 246.713 | 41,9 % | 166.603 | 22,5 % | 162.569 | 23,6 % | -4.034 (-2%) |
| | current assets | 342.294 | 58,1 % | 574.960 | 77,5 % | 525.206 | 76,4 % | -49.754 (-9%) |
| | total assets | 589.007 | 100% | 741.563 | 100 % | 687.775 | 100 % | -53.788 (-7%) |
| PP VOJVODIN | fixed assets | 226.337 | 51,2 % | 167.437 | 24,1 % | 176.770 | 28,2 % | 9.333 (6%) |
| | current assets | 215.564 | 48,8 % | 528.368 | 75,9 % | 449.863 | 71,8 % | -78.505 (-15%) |
| | total assets | 441.901 | 100% | 695.805 | 100 % | 626.633 | 100 % | -69.172 (-10%) |

*Source: Calculation of author*

**Table 2.** Horizontal and vertical analysis of liabilities and equity of the balance sheet

| LIABILITIES & EQUITY | | 2009 | Vertical analysis | 2012 | Vertical analysis | 2013 | Vertical analysis | Horizontal analysis (2012/13) |
|---|---|---|---|---|---|---|---|---|
| PP RATKOVO | capital | 1.172.048 | 93,5 % | 1.453.201 | 93,2 % | 1.574.451 | 95,4 % | 121.250 (8%) |
| | liabilities | 70.827 | 6,6 % | 95.187 | 6,8 % | 64.368 | 4,6 % | -30.819 (-32%) |
| | total L&E | 1.253.371 | 100 % | 1.559.760 | 100 % | 1.650.319 | 100 % | 90.559 (6%) |
| PP MILETIĆ | capital | 186.872 | 34,3 % | 259.553 | 31,7 % | 357.201 | 45,4 % | 97.648 (38%) |
| | liabilities | 358.673 | 65,7 % | 560.074 | 68,3 % | 413.046 | 54,6 % | -147.028 (-26%) |
| | total L&E | 545.545 | 100 % | 819.627 | 100 % | 770.247 | 100 % | -49.380 (-6%) |
| PP FEKETIĆ | capital | 289.291 | 39,2 % | 193.865 | 26 % | 212.678 | 29,1 % | 18.813 (10%) |
| | liabilities | 448.867 | 60,8 | 552.410 | 74 % | 500.625 | 68,5 % | -51.785 (-9 %) |
| | total L&E | 738.158 | 100 % | 746.275 | 100 % | 730.538 | 100 % | -15.737 (-2%) |
| PP SOMBOR | capital | 356.530 | 60,5 % | 473.799 | 63,9 % | 496.211 | 72,1 % | 22.412 (5%) |
| | liabilities | 232.477 | 39,5 % | 267.764 | 36,1 % | 191.564 | 27,9 % | -76.200 (-28%) |
| | total L&E | 589.007 | 100 % | 741.563 | 100 % | 687.775 | 100 % | -53.788 (-7%) |
| PP VOJVODIN | capital | 119.147 | 27 % | 358.774 | 51,6 % | 382.027 | 61 % | 23.253 (6%) |
| | liabilities | 322.754 | 73 % | 337.031 | 48,4 % | 244.606 | 39 % | -92.425 (-27%) |
| | total L&E | 441.901 | 100 % | 695.805 | 100 % | 626.633 | 100 % | -69.172 (-10%) |

*Source: Calculation of author*

PP Ratkovo fixed assets remained unchanged throughout the observation period, but the current assets increased through conversion of profit to current assets. Current assets increased the most in the enterprise Ratkovo Ltd. (by 33%), while all enterprises of Agribusiness partner group recorded a fall, an average of 9.25%.Fixed assets, in relation to year 2009, decreased in all companies of Agribusiness partner group and it is obvious that in the company PP Sombor in 2009 and 2010 there was a sale of part of fixed assets

and converting to current (which resulted in lower income base). Positive changes in equity (capital) observed in the last two years have occurred in all companies.

The main difference in the operations of these enterprises in the period of the last two years has occurred with the liabilities of PP Ratkovo by managing to reduce its long-term liabilities by 59%, and its short-term liabilities by 2%, thus the company has strengthened its ownership structure and showed that its structure of fixed and current assets should be an example of management of agricultural enterprises.

Already in this comparative horizontal analysis of listed companies is obvious that the assets and liabilities increased at Ratkovo doo. Structure of sources is repaired and total enterprise value increased.

For enterprises of Agribusiness partner group, there was a positive change in the structures of the source of funds, but there has been a reduction in the overall value of the enterprise which is a negative trend, and therefore must be halted.

**Table 3.** Horizontal and vertical analysis of the income statement

| | INCOME STATEMENT | 2009 | Vertical analysis | 2012 | Vertical analysis | 2013 | Vertical analysis | Horizontal analysis (2012/13) |
|---|---|---|---|---|---|---|---|---|
| PP RATKOVO DOO | total revenue | 323.480 | 100 % | 463.658 | 100 % | 549.166 | 100 % | 85.508 (18%) |
| | total expenses | 429.513 | 132 % | 355.300 | 76,6 % | 419.897 | 76,5 % | 64.597 (18%) |
| | EBIT | -58.219 | / | 102.619 | 22,1 % | 125.819 | 22,9 % | 23.200 (23%) |
| | EBITDA | -33.709 | / | 139.623 | 30,1 % | 171.931 | 31,3 % | 32.308 (23%) |
| | net income | -98.570 | / | 108.358 | 23,4 % | 121.251 | 22,1 % | 12.893 (12%) |
| PP MILETIĆ AD | total revenue | 531.674 | 100 % | 377.491 | 100 % | 508.408 | 100 % | 130.917 (35%) |
| | total expenses | 503.933 | 94,8 % | 324.284 | 85,9 % | 411.577 | 80,1 % | 87.273 (27%) |
| | EBIT | -106.473 | / | 64.043 | 17 % | 102.771 | 20,2 % | 38.728 (60%) |
| | EBITDA | -91.479 | / | 78.561 | 20,8 % | 115.363 | 22,7 % | 36.802 (47%) |
| | net income | 27.741 | 5,2 % | 53.207 | 14,1 % | 96.851 | 19 % | 43.644 (82%) |
| PP FEKETIĆ AD | total revenue | 224.266 | 100 % | 312.290 | 100 % | 394.411 | 100 % | 82.121 (26%) |
| | total expenses | 315.417 | 140% | 284.915 | 91,2 % | 375.598 | 95,2 % | 90.683 (32%) |
| | EBIT | -59.725 | / | 16.578 | 5,3 % | 26.415 | 6,7 % | 9.837 (59%) |
| | EBITDA | -41.183 | / | 29.291 | 9,4 % | 56.409 | 14,3 % | 27.118 (93%) |
| | net income | -91.151 | / | 27.375 | 8,7 % | 18.813 | 4,8 % | -8.562 (-31%) |
| PP SOMBOR AD | total revenue | 643.480 | 100 % | 346.858 | 100 % | 245.034 | 100 % | -101.824 (-29%) |
| | total expenses | 591.744 | 91,9 % | 344.456 | 99,3 % | 217.998 | 88,9 % | -126.458 (-37%) |
| | EBIT | -20.051 | / | 40.528 | 11,7 % | 35.947 | 14,7 % | -4.581 (-11%) |
| | EBITDA | -6.679 | / | 48.950 | 14,1 % | 43.220 | 17,6 % | -5.730 (-12%) |
| | net income | 17.978 | 2,8 % | 2.104 | 0,6 % | 22.412 | 9,1 % | 20.308 (965%) |
| PP VOJVODINA BB AD | total revenue | 255.737 | 100 % | 254.092 | 100 % | 262.370 | 100 % | 8.278 (3%) |
| | total expenses | 262.584 | 102 % | 247.500 | 97,4 % | 237.989 | 90,7 % | -9.511 (-4%) |
| | EBIT | -61.758 | / | 16.087 | 6,3 % | 28.070 | 10,7 % | 11.983 (74%) |
| | EBITDA | -56.764 | / | 20.407 | 8 % | 32.787 | 12,5 % | 12.380 (61%) |
| | net income | -6.847 | / | 5.876 | 2,3 % | 23.253 | 8,9 % | 17.377 (296%) |

*Source: Calculation of author*

In the Horizontal analysis of the Income Statement of listed companies in addition to the basic categories of total revenue and total expenditure and hence achieved net profit we have included two additional indicators of business performance EBIT and EBITDA.

This indicator (EBIT) tells us about earning power of company and therefore we gave this indicator special emphasis so we could recognize within observed agricultural companies of primary agricultural production location where a fundamental difference in the achievement levels of corporate profits emerge.

In our study, special attention was paid to finding the cause of achieving different levels of profit in the observed company.

All considered enterprises are 2009 years before the takeover by the current owners had <u>negative</u> EBIT and EBITDA. Over the years earnings involvement in operating income has increased but not in proportion and not as progressive within all surveyed companies.

In order to accurately conclude the reasons for the EBIT and EBITDA different trends and different involvement in operating income, we did percentage involvement of material costs compared to operating income and the impact of the cost of wages salaries and other personal expenses compared to total income.

Enterprise PP Ratkovo succeeded to convert negative EBIT (-21%) from 2009 into a stable positive EBIT margin of 23% in both 2012 and 2013 which at the moment can be called the most desirable margin in ordinary course of business in agriculture and especially when you add to that the company did a serious depreciation of existing assets in the last two years, which allowed EBITDA to reach 32%; this can be treated as a model for other companies observed categories. Share of material costs in operating income was 48% in 2009 and then recorded a steady decline with 34% in 2012 down to 29% in 2013 which can be considered as an ideal material share of production costs in agricultural production. The share of wage costs decreased from 22% in 2009 to 12% in 2012 and in 2010 to an amazing 10%. These are remarkable results of operations aimed at realizing a large profit from continuing operations of agricultural enterprises. Within enterprises of Agribusiness partner group situation has also improved, but not nearly as in PP Ratkovo.

If we know that the share of wages in operating income of PP Ratkovo is 10% it is difficult to comment on the share of wages in total income of 28% (which is average of the group) and it is certain that this cannot be a long-term sustainable category. Certainly in the material cost and in payroll expenses Agribusiness partner group must react quickly and reduce this share, or absolutely redact these categories or increase business revenue.

An additional space for improvement in addition to this reduction could be found in the reduction of other operating expenses and the acquisition value of the sold goods since it is apparent that the enterprise is engaged in transit goods sales beside primary production.

## Vertical analysis

Vertical analysis of structure of assets in companies PP Ratkovo doo shows fixed assets is in 2012 as 73.1% and in the year 201367.5% of the total assets. By increasing current assets, company Ratkovo doo defines its asset structure in such a way that it brings the greatest profit. Within company PP Miletić property and PP Feketić share of fixed assets in the overall structure of the active can be considered theoretically stable while in the companies PP Sombor and PP Vojvodina, where the structure of assets increases the share of fixed assets but in the final structure for the reporting year reached only 23% involvement, which means that these companies deal, in addition to primary production, with trading activities.

In the liabilities and equity structure of the PP Ratkovo capital is 95.4% in 2013 which means that all of fixed assets are covered from own resources (capital) and they are indeed the owners of the resources and here are current assets covered by long-term sources and this strives to an ideal structure. PP Ratkovo can be seriously indebted and get into a serious investment, since it does not rely on business partners. In the companies of Agribusiness partner group the situation is worse and could be defined in the following way.

In the company PP Miletić capital in 2012 had a share in total liabilities of 31.7% and in 2013 structure had positive changes despite the decrease in total liabilities, share capital increased to 47.2%. It is clear that there is the great dependence in company PP Miletić to suppliers and other creditors, but the company has a good tendency and rapid ability to adapt to this structure so that it can generate maximum profits.

In enterprise PP Feketić situation is drastically worse - share of capital in total assets structure is increased from 26% to 29.1%, but this is too low level of capital. The company is affected by the pressure of suppliers and other creditors and this drastically affects the performance of the company. Business owners do not own even 30% of the total value and the company must take urgent actions to stabilize the situation. If we add to this that from its own assets and long-term liabilities company does not cover the fixed assets but instead have used credits from the costly short-term sources, it is clear that these categories have drastic effect on the level of operating costs and thus on generating healthy profit level in company.

For enterprise PP Sombor and PP Vojvodina situation is more stable. Fixed assets are covered by their own capital (golden rule) and therefore created the opportunity for increased profitability. The structure of the sources is stable and allows the owners of a lot of security in enterprise management.

For enterprise PP Vojvodina Bački Brestovac share of capital in the structure of funding sources has also increased over the last two years. If we add that fixed assets are fully covered by this, we see that the structure gained a particular security. Comment in the last two observed companies is that, in our opinion, in agriculture the primary agricultural production, share of fixed assets in the total assets of the enterprise is

low. The two enterprises, based on structure of assets, looks more like a trade sized enterprises than on enterprises with primary agricultural production in their own areas.

In the observed companies short-term liability share is too high and that means that companies are operating under very expensive market conditions because is funded with short-term sources. In the vertical analysis of the income statement we should put all elements (cost of goods sold, profit, net profit, general expenses) in relation with the value of the total revenue.

Total expenditure and net income does not make total revenue in our table because we haven't show the category of income taxes.

## Ratio analysis

It's important to determine aim of the analysis in which indicators will have purpose. In analysis of the financial reports through ratio indicators standards which are used are: knowledge and experience of the analyst, comparison of the branch average values, historical data and comparison of planned values with determined standards.
The emphasis is on the comparative analysis where will be used: liquidity ratio, debt ratio, activity ratio, profitability ratio. All analysis is for the purpose of perception of their importance for achieving the best results for observed companies.

## Liquidity ratio

Liquidity indicators are intended to show the company's ability to service its payment obligations to pay, while maintaining the necessary structure of assets and the preservation of good credit solvency.

Table 4. Liquidity ratio

| Liquidity ratio | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| PP Ratkovo doo | 2,58 | N/D | 7,45 | 8,48 | 11,46 |
| PP Miletić ad | 0,63 | 0,73 | 0,74 | 0,84 | 1,05 |
| PP Feketić ad | 0,50 | 0,51 | 0,56 | 0,74 | 0,78 |
| PP Sombor ad | 1,61 | 2,13 | 1,70 | 2,15 | 3,05 |
| PP Vojvodina BB ad | 0,67 | 1,43 | 1,64 | 1,59 | 1,86 |

*Source: Calculation of author*

Enterprise PP Ratkovo has increased from 2009 almost 5 times current ratio and now is five times higher than normal ratio; it is obvious that company is able to fully manage its liquidity and to settle all obligations on time to its creditors so they do not have to worry about the claims settlement. PP Ratkovo achieves best market conditions and creditworthiness and thus has a very positive effect on reducing production costs and other costs and increase profits.

For enterprises PP Miletić situation is drastically different, even though ratio has tendencies of growth it is still on the level where the company has difficulties to pay

its obligations and where suppliers are using stronger prices trying to compensate for uncertainty in the collection of receivables, so the company does not have the ability to realize additional benefits in the market resulting from the stable liquidity.

PP Feketić has major liquidity problems with the settlements to suppliers and creditors. Fact that only 78% of its short-term obligations can pay from its own funds indicates that at any moment it can block the accounts of companies that do not meet its obligations. Its protective factor is the size of the group, because with such liquidity company can't maintain regular work for long.

Company PP Sombor in last two years has a stable liquidity ratio that meets defined norms and far above the average of the group in which it operates. It has a potential to be a carrier of the market withdrawal group and try to achieve basic market conditions at the supplier.

PP Vojvodina in the last five periods of the observed time span has improved overall liquidity ratio, and in that light advice would be to make procurements through group carrier which would improve its market position as well as profitability. To be even safer in the liquidity of these companies we will implement more stringent test.

## Quick (acid test) ratio

For enterprise PP Ratkovo fast current ratio is above the normal limits and even records very distinct growth in the last two years. This fact gives the company a great maneuver market space and the opportunity at any time to obtain all the materials and necessary working capital in order to achieve the best possible profit.

Table 5. Quick (acid test) ratio

| Quick ratio | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| PP Ratkovo doo | 1,27 | N/D | 4,27 | 4,88 | 7,52 |
| PP Miletić ad | 0,41 | 0,50 | 0,61 | 0,72 | 0,76 |
| PP Feketić ad | 0,26 | 0,34 | 0,43 | 0,56 | 0,56 |
| PP Sombor ad | 1,15 | 1,91 | 1,52 | 2,06 | 2,78 |
| PP Vojvodina BB ad | 0,46 | 1,28 | 1,49 | 1,48 | 1,60 |

*Source: Calculation of author*

On the other hand the companies in Agribusiness partner situation are very similar with previous general liquidity ratios and companies are denied the opportunity to achieve additional financial benefits on the market. Enterprises PP Sombor and PP Vojvodina Bački Brestovac have very fair quick ratio while in the company PP Miletić and PP Feketić quick liquidity ratio indicates that the companies are in the current liquidity problems and that can cause extension in settling obligations to suppliers which has consequences on the income statement and increasing costs.

Looking into the company's liquidity through the liquidity ratio it is obvious that all companies are not the same and various analysts perceive this ratio differently which affects companies profitability directly and indirectly.

1. PP Ratkovo leads good policy of its own liquidity. In companies PP Sombor i Vojvodina BB indicators are at the level of the prescribed standards of business and enterprises PP Miletic should change their structure of short-term liabilities into long-term and PP Feketić must increase capital in relation to obligations thus provide the company long-term or own sources of funding because its solvency is threatened and thus profitability.

2. Owners of company PP Ratkvo are satisfied, the company will operate without the liquidity problems, PP Ratkovo has favorable conditions for the development. Enterprises PP Sombor and PP Vojvodina BB situation is that companies can operate regularly without any particular problems with liquidity. Company PP Feketić must immediately modify the liquidity policy and owners must add their own capital or establish partnership with someone who will do it. At PP Miletić enterprises owners and management must conduct restructuring by converting part of the short-term liabilities into long-term.

3. Creditors and business partners companies PP Ratkovo do not have to worry about their claims - they will be paid in full amount, while creditors of Agribusiness partner groups must decide to collect receivable payments in a way that does not jeopardize liquidity of companies. From PP Sombor and PP Vojvodina it can be expected to pay with some degree of delay while in the PP Miletić and especially PP Feketić receivables can be collected through compensation, assuming the claims, assignment etc.

4. Banks will without trouble offer liquidity loans and investments to the company PP Ratkovo while enterprises in Agribusiness groups will have to be considered together and as such be treated with careful defined credit policy, which will certainly have a price.

### Debt ratio

PP Raktovo is financed with its own capital. Company PP Miletić in 2009 had a share of liabilities of 65% and in the selected period managed to reduce it to 54%. The company PP Fektetić has a substantial share of liabilities in total assets. The share of liabilities in the overall structure of the source has a market price which directly affects the profitability of the company. In enterprises PP Sombor and PP Vojvodina BB there has been a reduction in liabilities and total debt went in PP Sombor from 39% in 2009 to 28% in 2013. In the company PP Vojvodina ratio dropped from 73% in 2009 to 39% in 2013.

## Time repayment obligation

One of the key issues in any business enterprise is how much time it takes to pay off all existing debts and it is calculated as the period of repayment.

If it is greater than 4, or if you need more than four years to pay off the debts, the management in company must respond and must reduce obligations or increase EBITDA, which means that it must increase profitability by reducing costs or increasing revenues by using the same capacity.

Using EBITDA in relation to total liabilities for PP Rakovo it takes only 5 months; for PP Miletić is a necessary period of 3.5 years which is also very acceptable. In PP Sombor necessary period to settle all obligations is 4.5 years which can also be considered acceptable while the PP Vojvodina required period of 7.5 year which is not good and should react. On the other hand PP Feketić need more than 9 years, which is an alarming situation and in case that does not respond quickly or add their own capital which would settle the obligation, or increase EBITDA enterprise will fall into existential problems.

## Activity ratio

Indicators of asset turnover ratio shows that the company PP Ratkovo less efficiently invests business asset and that every penny invested in operating assets generate smaller revenues from sales. In enterprises of Agribusiness group explanation can be easily found by looking at the structure of company's property or perhaps ways of valorization fixed assets through accounting.

To be able to make clearer conclusions about the effectiveness of doing business we will look at turnover ratio of inventories to determine whether the physical inventory increase was caused by financial conceived project management, attempts to influence the operating results or the inability realization of inventories. In the company PP Ratkovo it's obvious that they control turnover and time of inventory sales which results in reduction of total turnover but increase in profitability.

To be able to fully comment on the inventory turnover we will also look and how many days are stocks related (days in inventory)

Inventory turnover ratio and days in inventory is certainly different and we will comment in such matter considering we are dealing with agricultural enterprises engaged in primary agricultural production and other businesses. It is a known fact that rates of inventory turnover and the less number of days in inventories period are recommendations of good practice. But in our case, we start from the following facts.

These are enterprises of the agricultural sector, which has a long production cycle and the specific purchase of agricultural products at the end of the production cycle. Selling products at this time will achieve the best turnover ratio but the question is whether it achieves the best prices. Profit and profitability of agricultural enterprises may tell us that the sale of its finished products most important category for profits in agricultural enterprises.

Since in out observed companies an example of PP Ratkovo show us that it has the best structured sources of funds with which generates the best financial results but has worst asset turnover ratio, but also has good days in inventory at 249 days, which means that it can choose moment of sales for its finished products and thus making the best results. Looking at businesses in Agribusiness partner group we can see that they do not have overall control of the moment of selling their products but rather sell them when they have to repair liquidity but this does not create best market conditions which directly influence the profitability and level of income.

**Table 6.** Inverse proportion between turnover ratio of inventories, EBIT and EBITDA, profit margin and ROA

| | Turnover ratio of inventories | Days in inventory | EBIT margin | EBITDA margin | Profit margin | ROA |
|---|---|---|---|---|---|---|
| **2013** | | | | | | |
| PP RATKOVO | 1,47 | 249,14 | 23,40 | 31,97 | 24,18 | 7,55 |
| PP MILETIĆ | 3,51 | 103,87 | 20,50 | 23,01 | 30,02 | 12,18 |
| PP FEKETIĆ | 3,43 | 106,38 | 6,87 | 14,68 | 6,92 | 2,55 |
| PP SOMBOR | 4,91 | 74,28 | 14,97 | 18,00 | 12,41 | 3,14 |
| PP VOJVODINA | 2,82 | 129,49 | 12,00 | 14,02 | 14,41 | 3,52 |
| **2012** | | | | | | |
| PP RATKOVO | 1,63 | 224,04 | 23,46 | 31,92 | 26,86 | 7,17 |
| PP MILETIĆ | 3,68 | 99,13 | 17,35 | 21,28 | 18,63 | 6,66 |
| PP FEKETIĆ | 2,92 | 125,16 | 6,16 | 10,88 | 13,23 | 3,70 |
| PP SOMBOR | 3,18 | 114,76 | 12,45 | 15,04 | 0,73 | 0,26 |
| PP VOJVODINA | 3,02 | 120,91 | 7,08 | 8,98 | 2,79 | 0,85 |
| **2009** | | | | | | |
| PP RATKOVO | 2,73 | 133,87 | -21,71 | -12,57 | -38,62 | -7,54 |
| PP MILETIĆ | 3,98 | 91,69 | -29,58 | -25,41 | 7,99 | 5,00 |
| PP FEKETIĆ | 2,15 | 169,88 | -29,81 | -20,56 | -47,19 | -12,34 |
| PP SOMBOR | 4,31 | 84,62 | -3,63 | -1,21 | 3,51 | 3,14 |
| PP VOJVODINA | 2,90 | 125,76 | -34,66 | -31,86 | -3,83 | -1,73 |

*Source: Calculation of author*

**Accounts receivable collection period (day's sale outstanding)**

This indicator shows in which period the claims are collected from suppliers and when you compare that with days in inventory and billing of customers we can see it from whose funds the company is mainly funded during the year.

If that is put in relation with the number of days in the year, we can see that the company PP Ratkovo accelerates payments of their claims so during the last two years with 114 days dropped to 67.

In companies of Agribusiness partner groups, we can conclude that there are major problems in collecting receivables. The company PP Miletić debt collection with more than one year decreased to 296 days, which is stable in the group, but this collection is not recommended. Other group companies have even less turnover ratio of suppliers so that in the PP Sombor in 2013 it is 811 days, which means compensation were made but were not implemented or company doesn't have control in debt collection. I think companies of Agribusiness partner groups must absolutely consider the business of the whole group in the collection of receivables as well as booking of these data, because at the current state it creates impression that they don't have the control in the collection of receivables and thus the impact on liquidity and profitability.

## Profitability ratio

Gain and loss are the result from the commitment and sources of funding. If the means and resources are used efficiently the firm is making a profit if you do not there is business loss. When the profit (in case of we do not have anything to interpret) is put in relation with the resources that are engaged in their creation we can get different indicators of profitability. Some researchers recommend that corporate entities should not pursue extreme liquidity policies at the expense of their profitability, i.e. they should strike a balance between the two performance indicators (liquidity and profitability) (Chukwunweike, 2014).

Having reflected upon indebtedness impact on the profitability of domestic companies prior to and after the financial crisis, some authors concluded that the impact of financial leverage on the business results had continuously been diminished. In order to avoid over-indebtedness, companies are forced to reduce financial leverage, which influences a considerable fall in profitability (Račić, Barjaktarović, Zeremski, 2011).

## Profit margin

The examples above show that the agricultural activity of primary agricultural production, depending on harvest and price, profit margin can be very stable category.

In the example of PP Ratkovo profit margin of negative trend, i.e. great loss in 2009, but managed to regain stable profit margin at the level of 26.8% and 24.2% achieved in the last two observed years of business and that demonstrates that the company is working very well and making a profit.

In the case of PP Miletić, we can say that in the last two years profit margin also stabilized and reached a certain average, and that at this rate firm may continue to work and in the coming period it will remove all the problems addressed in the structure of sources and create a considerable profit.

For enterprises PP Fektetić negative profit margin was also recorded in 2009 and 2010 and even after that company failed to achieve an adequate financing structure and the production costs are so great that brings presence of company in the appropriateness

of the profit margin of 6.9% in 2013 in agricultural production, therefore the company cannot move forward.

PP Sombor also cannot stabilize their profit margin, and must identify objective reasons for such business as it seriously deviates from the average of both companies in group and in comparison with stable PP Ratkovo.

PP Vojvodina has the possibility of adjusting the input and output categories to stabilize the business and improve its profit margins, which in the last two years shows that there has been progress, but not enough for such an enterprise.

### Return on assets (roa)

Company PP Ratkovo has a stable rate of return on business assets- over the past two years ROA has stabilized at over 7% while the at Agribusiness partner group positive influence has occurred in the company PP Miletić, which in the past two years has stabilized rate of return on operating assets, while in other companies from the group, this rate of growth is not enoughand would have to stabilize it in the future.

### Return on equity (roe)

Is also one of the important indicators of the profitability of the company and refers to the yield of own capital (equity).

In our case, it is very important to remember the indicators of financing, and that can tell us that PP Ratkovo has share of capital in the financing of 95% in 2013 which effects on roa realistic projection.

### Conclusion

1. Through comparative financial analysis of five surveyed companies of the same branch and activities with practical application of methods and techniques we concluded that all of the techniques in its domain indicated that the company PP Ratkovo operates more stable and closer to the anticipated standard and each element has better indicators than enterprises in Agribusiness partner group. Through horizontal and vertical analysis, it was concluded that companies use expensive external sources of funding. We have precisely defined in which part of the cost the largest differences occur and what are optimal days in inventory which affects directly profitability of the agricultural companies.

2. Companies in Agribusiness group, in order to have a clear situation and could keep track of the business, each of them must cleanse internal relations with mutual posting and revaluation of fixed assets as they should be aware that the balance sheet and income statement are public available categories and that each analyst has access to their financial reports. To improve profitability we must conduct financial consolidation for companies in the field of source changes and funding structures, eventually delayed at which we individually defined for each enterprise.

The company PP Miletić should at least change the structure of the short-term obligations and commitments and turn into a long-term under favorable conditions. Company PP Feketić should make a specific plan of reorganization. Situation could lead to the point where the other firm or the owners have to save this enterprise with recapitalization. In PP Sombor it is essential to stop the decrease in assets and stabilize the situation between fixed and current assets because it is obvious that the PP Sombor trade most of all members in Agribusiness partner group. PP Vojvodina Bački Brestovac has good conditions to conduct positive business in the future period to compensate for declining assets.

3. In this research, the author has proved the general and partial hypothesis. A general assessment of five choosen agricultural companies was conducted, and then, their financial performance was analyzed using Financial Statement Analysis, Percentage Method, Trend Analysis and Ratio Analysis techniques with the aid of financial statement for the period of 2009-2013. Financial analysis is an indispensable part of the decision making process in agriculture, but adequate interpretation of the obtained results is only possible in the proper context (it is necessary to take into account the specific characteristics of agriculture). It is also necessary to take into account the historical data limitations.

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# UZROCI RAZLIČITE PROFITABILNOSTI POLJOPRIVREDNOG SEKTORA

*Branko Vučković[2]*

## Abstrakt

*Identifikacija razloga različite profitabilnosti u sektoru primarne polljoprivredne proizvodnje urađena na studiji slučaja skoro identičnih poljoprivrednih preduzeća. Dokaz da finansijski mix i u okviru sličnih poljoprivrednih preduzeća dovodi do različite profitabilnosti.*

*Uporednom finansijskom analizom pet posmatranih preduzeća iste grane, delatnosti i praktičnom primenom metoda i tehnika smo konstatovali* da *su sve tehnike u svom domenu ukazivale da jedno preduzeće, PP Ratkovo, posluje stabilnije i bliže predviđenim normama i u svakom elementu ima bolje pokazatelje od druge grupe preduzeća. Horizontalnom i Vertikalnom analizom je konstatovano da preduzeća Agribusines partner group koristi skupe tuđe izvore finansiranja. Precizno smo definisali u kom segmentu troškova se javljaju najveće razlike i koji su razlozi da PP Ratkovo u poslednje dve godine ispolji odličnu profitabilnost, merenu po svim kriteijumima, EBIT, EBITDA, NETO DOBIT, kao i odličnu stukturu materijalnih troškova i troškova plata u okviru poslovnih prihoda i razloge zašto to nisu uradila preduzeća Agribusines partner group.*

***Ključne reči***: *Profitabilnost, Poljoprivredni sektor, Finansijska analiza.*

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# AGRARIAN POTENTIALS IN THE REINDUSTRIALIZATION OF SERBIA - import of inputs and the opportunity costs of development -[1]

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## Abstract

*After transitional debacles and failures, structural degradation and recession, reindustrialization is imposed as a crucial stage in the economic development of Serbia. The production-market potentials of the agro-complex (as a complex economic subsystem of pre-farm, farm and post-farm activities) and its place in the national economy open the significant possibilities of the revitalization of the industries of agrarian inputs (agricultural machines and equipment, mineral fertilizers and pesticides). Considering the structural significance of the pre-farm agrarian sector in the Serbian economy, this paper analyzes the fundamental features of production and the foreign-trade exchange, especially the dynamics and changes in the volume and structure of production and the import of agrarian inputs.*

*On that basis, through a target comparative analysis of multi-year data series (1986-2011), the paper explores the trends of production and employment, identifies transitional distortions and the growing import dependence of the Serbian economy and the agro-complex in particular, considers the agrarian potentials in a possible reindustrialization primarily via the revitalization of the industry of agrarian inputs, and highlights a special phenomenon of the opportunity costs of the Serbian agrarian development.*

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## Introduction

Agri-food sector (agro-complex) gives key structural features to the economic and industrial reality of Serbia (especially after the unsuccessful privatization, transitional recession and deindustrialization[5]).

The agro-complex itself can be defined as a major subsystem of the overall economy and it consists of three main segments: 1) pre-farm activities (industry of production means, i.e. production of industrial inputs for agriculture); 2) primary agriculture (production of agrarian raw material for food processing and production); 3) post-farm activities (processing, turnover and consumption of final food products).

Structural positioning of agro-complex as an economic subsystem, its place and role in the national economy development can be established and estimated in numerous ways.

Author emphasizes that the significance of agro-complex can be globally estimated by four reliable indicative parameters: 1) the share of the complex in GDP, 2) contribution to the employment, 3) participation in foreign trade balance and 4) participation in the structure of personal consumption, that is, the share of food expenses in households' budgets (Milanović, 2002).

In that context, we will here deal with trends in the basic agrarian inputs production, some questions concerning import dependence of agriculture, potential role of agro-complex in revitalization of certain industrial branches as well as needs and possibilities of reindustrialization of Serbian economy, on the basis of the increase in domestic production of agrarian inputs as industrial products with agriculture as an exclusive market.

In the postwar period, rapid development of the industry enabled an enormous transfer of labour from agriculture to industry and from rural to urban areas. Industrialization changed substantially the economic structure, prompted the division of labour,

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5    The term *deindustrialisation* is used to describe reduction of the shares of industry in creating gross-domestic products, new values and employment participation of a country. In the case of contemporary market economy, deindustrialisation is the legal trend of development, which should be led toward the so-called postindustrial society, as (currently) the highest phase of (industrial) development of humanity. In this phase, creating of gross-domestic product, new values, and creating employment, the service sector dominates, whereby the importance of industry in overall development is not reduced. This phenomenon is, above all, the consequence of strong scientific-technical progress in the area of industry and new ways of organizing of industrial companies (concentrating on basic business activities and leaving secondary and tertiary business activities to the service industry, the so-called thinning of companies). Unfortunately, the deindustrialisation of Serbia has no contact points with this model (Adžić, 2011).

specialisation and diversification, provided a very high pace of job growth, created the conditions for the dynamic development of scientific and technological progress, improved structure and increased the volume of foreign trade, created conditions for the development of other economic sectors (primarily agriculture) and radically improved the overall standard of living (Savić, 2009).

The efficiency of industrial development was very low, and the formed industrial structure was conservative, i.e. quite unsuitable as a basis for the future development of the industry. In the last decade of the twentieth century, there was a definite fall of the industrialization model applied in Serbia. The generally accepted view is that the collapse of Serbian industry occurred as a result of the plight in which Serbia was in the last decade of the twentieth century. In recognition of these circumstances, we believe that Serbian industry would have been in crisis even if the international sanctions had not been imposed and even without the relentless destruction of its capacity in 1999, only the crisis would not be so deep (Savić, 2009).

A similar view is shared by other authors. The seventies and eighties of the twentieth century can be defined as a period of illusory growth, in which the conservative and inadequate economic and especially industrial structures were formed (high share of traditional, labour-intensive, resource and energy sectors, low levels of processing). Economic growth was not self-affirmed in the market and it certainly was not in disagreement with the foreign competition (Gligorijević, Bošković, 2007).

According to Šoškić, 'the development model' was dominantly reduced in Serbia to the opening of banks, shopping malls, betting houses and construction of luxury residential and commercial buildings. The structure of added value for nearly 60% comes from services, while only 29% comes from industry and construction. Compared to the EU countries, which are by the level of GDP per capita closer to Serbia, it can be seen that they have a much higher percentage of industry and construction (30-38%) than in Serbia (Šoškić, 2009).

Research shows that privatised industrial enterprises did not improve the effectiveness of operations (as a logical consequence of the change of ownership structure), inter alia, because the new owners were not interested in intensifying the existing production. Capital turnover is slower in the industry, and requires much more knowledge and management skills, which local or private individuals neither possess, nor can acquire in the short term. Only a small number of privatised enterprises made significantly better results than prior to the privatisation, which they owe to their entry to the foreign capital property (e.g. Slovenian and Croatian), because these companies generally do not have problems of bad privatisations (drop in production, plant shutdown, layoffs, etc.) (Bošković, 2011).

Employment in the industry was reduced by half during the 2000s. The share of industrial production in the creation of gross domestic product amounted to (only) 13% and was the lowest in the region, structural changes were modest and slow, the losses piled up (Vučković, 2010).

The food industry can become a significant exporter of healthy (organic) food with a distinctive national origin. The export of these products, especially to the EU market, requires adaptation of local regulations in food production to the demands of this market. The food industry determines not only the export but also the food security of the country, and it provides the production of raw materials for other industries and has a manifold influence and importance for complementary agricultural development and intensification of production in it (Mićić, Zeremski, 2011).

Agriculture and agro-industry have been considered as significant prospects of Serbian economy for years. In the period of major energy crisis in the world in the '70s ('oil shock') the phrase 'food is our oil' got assimilated'.

The development of agriculture and of the whole agro-food complex in that period was largely based on the development of agrarian inputs industry and (even) subsidization of their consumption.

However, two opposite trends have been noticed in the last years - rapid decrease in domestic production and consequently in the number of industrial workers in inputs production on one hand, and on the other, rapid increase in the import of tractors, machines and equipment for agriculture, mineral fertilizers, pesticides and other substances and means for animal and plant feeding and protection.

## Materials and Methods

Therefore, we are trying to quantify the most important macro-economic consequences of the two trends indicated.

Those consequences are numerous and can be expressed through the deindustrialization of economy, decrease in the number of industrial workplaces, import increase and negative foreign trade balance, increase in inputs' prices and decrease in their consumption by capacity unit, stagnation and extension of the whole agriculture, instability of agrarian market and rapid social stratification.

In order to have a more thorough insight into the complexity and structural position of a specific part of agro-industrial complex in Serbian economy, the analysis involves the so-called pre-farm industrial activities of agro-complex connected to production and to foreign trade balance.

The inputs production, in the sense of classification of the activities (which distinguishes six levels of aggregation: sector, subsector, field, branch, group and subgroup) has been observed on the level of subgroups, as the lowest level of aggregation.

The analysis includes production of the chemicals and machines for agriculture (fertilizers and pesticides) and food production.

Therefore, only the following subgroups have been included: 24,150 Production of fertilizers and nitrogen compounds; 24,200 Production of pesticides and other chemicals for agriculture; 29,310 Production of tractors for agriculture; 29,320 Production of other machines for agriculture; 29,530 Production of machines for food and drinks industry.

According to the foreign trade statistics i.e. international trade classification (sectors, departments, groups, subgroups, positions), the analysis includes specific industrial products with agriculture as an exclusive market, hence, all major agrarian inputs, primarily equipment, pesticides and fertilizers (which can be identified by two, three or four units in the Standard International Trade Classification as departments, groups or subgroups of industrial products whose consumption is intended for agriculture).

From sector 7-machines, means of transport, only the following have been included: 721 machines for agriculture, 722 tractors, 727 machines for food production.

From sector 5-chemical products, only pesticides for agriculture, namely subgroups: 5,911 insecticides, 5,912 fungicides and 5913 herbicides have been included.

Fertilizers have been classified into two sectors. That way, from sector 2-raw materials, department 27-raw fertilizers have been included (except from sector 56) and from sector 5-chemical products, department 56-fertilizers have been included (except the raw ones).

Thus, on the basis of official statistical data (Bureau of Statistics data base), the analysis of reindustrialized potential of agro-complex and its place in economic structure includes all most important segments of industrial branches whose production is exclusively intended for agriculture and food production, with a significant influence on processing, trade and consumption of final food products.

## Transitional distortions in agrarian inputs production

We start observing reindustrialized potential of agro-complex and its place in economic structure by the overview of the trends of production and employment in industrial branches with the production intended for agriculture. As mentioned above, five subgroups of activities have been included, within a relatively long period of 2- 2.5 decades (*Table1*).

The trends in production and employment were monitored during a relatively long period (1986-2010), which includes the time before sanctions, the former state separation as well as the time of so-called transition, liberalization and economic privatization.

It can be seen (*Table 1*) that in all 5 analyzed subgroups of activities, a rapid decrease took place and furthermore there was the termination of production of the most important agrarian inputs:

- production of machines for food industry almost totally stopped (!),
- production of tractors reduced 20 times by the end of the last decade of 20th century, from 100,000 tons, in mid '80s,
- production of other machines for agriculture also reduced more than 20 times in the period taken,
- production of pesticides reduced to 1/10 of the former volume,
- production of fertilizers reduced by 2/3 compared to the volume in mid '80s.

**Table 1.** Dynamics of reduction in agrarian inputs production in Serbia (1986-2010)

| Year | Fertilizers (t) | Pesticides for agriculture (t) | Tractors for agriculture* (t, piece) | Other machines for agriculture (t) | Machines for food industry (t) |
|---|---|---|---|---|---|
| 1986 | 2,505,639 | 36,148 | 98,045 t | 85,014 | 8,235 |
| 1987 | 1,449,134 | 32,657 | 91,418 t | 86,064 | 8,837 |
| 1988 | 2,407,934 | 34,683 | 92,604 t | 78,741 | 10,047 |
| 1989 | 1,905,469 | 27,911 | 94,074 t | 73,955 | 9,071 |
| 1990 | 1,525,739 | 23,231 | 62,736 t | 60,939 | 7,545 |
| Ø1986-1990 | 1,958,783 | 30,926 | 87,775 t | 76,942 | 8,747 |
| 1996 | 869,665 | 12,436 | 3,479 t | 6,405 | 354 |
| 1997 | 917,691 | 12,517 | 8,835 t | 11,606 | 198 |
| 1998 | 686,673 | 16,313 | 6,768 t | 11,300 | 169 |
| 1999 | 318,093 | 12,710 | 3,657 t | 6,274 | 107 |
| 2000 | 410,522 | 12,182 | 4,527 t | 7,375 | 200 |
| Ø1996-2000 | 640,529 | 13,231 | 5,453 t | 8,592 | 205 |
| 2006 | 679,579 | 6,157 | 2,387 | 4,967 | 387 |
| 2007 | 947,371 | 7,418 | 1,949 | 5,195 | 291 |
| 2008 | 605,206 | 6,418 | 1,826 | 5,697 | 55 |
| 2009 | 579,078 | 5,229 | 3,625 | 3,160 | 42 |
| 2010 | 905,842 | 4,040 | 2,153 | 3,386 | 53 |
| Ø2006-2010 | 743,415 | 5,852 | 2,388 | 4,481 | 165 |

\* By 2000, in tons, since 2006, number of pieces

*Source:* Statistical Office of the Republic of Serbia, Belgrade, *Bulletin Industry*; data bases: www.statserb.gov.rs

One of the most eminent domestic producers of tractors (IMT, New Belgrade, now in restructuring), whose production was in the beginning developed under license MASSEY FERGUSON, afterwards based on its own technical documentation, later even in cooperation with PERKINS, in 1988 reached record in production: 42,000 tractors and 35,000 machine with the value that was more than 600 million German Marks at that time (http://www.imt.co.rs/Istorija.php).

Knowing that in 1949, in IMR, the first Yugoslav tractor was manufactured (IMR Zadrugar T-08, petrol), the fact that the whole production of tractors in Serbia (2011) fell to less than 2,000 pieces a year, is really deplorable.

The firms from the analyzed subgroups of activities, like any other firms as economic entities 'sui generis', were established by the engagement of available economic factors in order to make a profit and achieve the ultimate goal - new engagement of those 'foundation' factors, primarily employment, as a factor of production.

Nevertheless, what happened to the employees in agrarian inputs industry in that completely wrong, socially unjust, discriminatory, immoral concept of the privatization of Serbian economy is shown in the Table 3.

Although the figures in the table above clearly show the rapid absolute decrease in the number of employees in agrarian inputs production, it is even more evident by the relative values in Table 4.

**Table 2.** Dynamic of reduction in agrarian inputs production (1986-2010)

(base indexes: 1986=100)

| Year | Fertilizers | Pesticides for agriculture | Tractors for agriculture | Other machines for agriculture | Machines for food industry |
|---|---|---|---|---|---|
| 1986 | 100 | 100 | 100 | 100 | 100 |
| 1987 | 58 | 90 | 93 | 101 | 107 |
| 1988 | 96 | 96 | 94 | 93 | 122 |
| 1989 | 76 | 77 | 96 | 87 | 110 |
| 1990 | 61 | 64 | 64 | 72 | 92 |
| Ø1986-1990 | 78 | 86 | 90 | 91 | 106 |
| 1996 | 35 | 34 | 4 | 8 | 4 |
| 1997 | 37 | 35 | 9 | 14 | 2 |
| 1998 | 27 | 45 | 7 | 13 | 2 |
| 1999 | 13 | 35 | 4 | 7 | 1 |
| 2000 | 16 | 34 | 5 | 9 | 2 |
| Ø1996-2000 | 26 | 37 | 6 | 10 | 2 |
| 2006 | 27 | 17 | - | 6 | 5 |
| 2007 | 38 | 21 | - | 6 | 4 |
| 2008 | 24 | 18 | - | 7 | 1 |
| 2009 | 23 | 14 | - | 4 | 1 |
| 2010 | 36 | 11 | - | 4 | 1 |
| Ø2006-2010 | 30 | 16 | - | 5 | 2 |

*Source:* Author's calculation based on data from Table 1.

In the mid '80s, there were about 30,000 employees in agrarian inputs industry (reliable statistical data about the employment in pesticides production lack, though it is known that in a few leading producers such as Župa-Kruševac, Zorka-Šabac, Zorka-Subotica, Galenika Fitofarmacija - Zemun, there were about 1,500 employees). During the period taken, in this, highly propulsive branch, several new small private firms were founded, mostly as agents and distributors of world famous producers.

The number of employees in all five subgroups of activities in this industry reduced to 2,600 in 2010. Consequently, only in agrarian inputs industry 27,500 workplaces were abolished during the transition (that is about 10 times more than it is promised by the state project FIAT or several biggest so-called direct foreign investments in Serbia).

It is obvious that market was not a limiting factor (as it was often emphasized as the reason for privatization and closing down of the firms in transition), as the domestic agriculture remained a safe big buyer, which is clearly shown by the data about agrarian inputs import.

Our opinion about the wrong, socially unjust, discriminatory, immoral concept of Serbian economy privatization, which, besides numerous negative consequences, also caused the process of deindustrialization, is based on two premises, the theoretical and the practical one.

**Table 3.** The number of employees in agrarian inputs production, 1986-2010

| Year | Fertilizers | Pesticides for agriculture* | Tractors for agriculture | Other machines for agriculture | Machines for food industry |
|---|---|---|---|---|---|
| 1986 | **6,197** | **-** | **9,630** | **11,700** | **1,414** |
| 1987 | 5,763 | - | 8,790 | 11,935 | 1,673 |
| 1988 | 5,082 | - | 8,380 | 11,660 | 2,013 |
| 1989 | 4,771 | - | 8,386 | 12,680 | 1,765 |
| 1990 | 3,776 | - | 6,540 | 12,473 | 1,819 |
| Ø1986-1990 | **5,117** | **-** | **8,345** | **12,089** | **1,736** |
| 1996 | 5,131 | - | 4,467 | 9,267 | 582 |
| 1997 | 5,310 | - | 8,037 | 8,825 | 255 |
| 1998 | 5,084 | - | 5,934 | 8,521 | 195 |
| 1999 | 4,324 | - | 5,002 | 8,569 | 170 |
| 2000 | 4,372 | - | 4,078 | 7,710 | 241 |
| Ø1996-2000 | **4,844** | **-** | **5,503** | **8,578** | **288** |
| 2006 | 2,477 | - | 1,694 | 3,397 | 589 |
| 2007 | 2,198 | - | 1,409 | 2,190 | 647 |
| 2008 | 2,043 | - | 1,214 | 1,817 | 606 |
| 2009 | 1,710 | - | 1,222 | 1,118 | 571 |
| 2010 | 1,350 | - | 958 | 959 | 565 |
| Ø2006-2010 | **1,955** | **-** | **1,299** | **1,896** | **595** |

\* Documentation of the Department for statistics of employment and wages (2006-2010), Bureau of statistics, Unreliable data for the subgroup Production of pesticides.

*Source:* Statistical Office of the Republic of Serbia, Belgrade, *Bulletin Industry*; data bases: www.statserb.gov.rs

The practical premise refers to the fact that the platform for the privatization was an eclectic mixture of positivist and normative economies. The positivist economy – the estimation is that the existent economic system is inefficient and unsustainable (which proved wrong because a lot of not privatized firms survived while most of the privatized ones closed down, except for the ones which already operated successfully as public. Moreover, even after 20 years, economic activity in that 'new and more efficient system did not reach its pre-transitional level). The normative economy - the statement that privatization is a necessary condition for 'what should be', that is, maximum benefit for each individual, common interest and/or economy of welfare. However, in the privatization process (which became a mere goal not a means), new owners did not purchase firms (as economic entities 'sui generis') but their property (real estate and reserves) and made most employees redundant. The state not only approved of such behavior of the new owners but also provided the redundant workers with premature pensions, gratuities and social programmes (thus rapidly increasing budget deficit and public debt).

Thus there is the premise about the failure of privatization concept which includes the dimension of righteousness and ethics.

The issue is brought up - which government (or political authority) can, establishing its macroeconomic aims of social and economic development, determine and change the destiny of any individual, by selling, in its own name and for its own account, in essence the 'non-state' (social, labor) property, doing this by privatizing their firms, abolishing their workplaces with the explanation that all the acts are of common interest and for the economic welfare in the future. The fundamental principle of the economy of welfare is toppled here, no matter whether it is accepted 1) that welfare of a society is determined solely by its members (fundamental ethical postulate of individualism) or 2) that society will benefit if any member does good without worsening the status of anyone else (Pareto principle) (Lovre, Zekić, 2011).

**Table 4.** Dynamic of reduction of the number of employees in agrarian inputs production (base indexes 1986=100)

| Year | Fertilizers | Pesticides for agriculture* | Tractors for agriculture | Other machines for agriculture | Machines for food industry |
|------|-------------|------------------------------|---------------------------|--------------------------------|-----------------------------|
| 1986 | 100 | - | 100 | 100 | 100 |
| 1987 | 93 | - | 91 | 102 | 118 |
| 1988 | 82 | - | 87 | 100 | 142 |
| 1989 | 77 | - | 87 | 108 | 125 |
| 1990 | 61 | - | 68 | 107 | 129 |
| Ø1986-1990 | 83 | - | 87 | 103 | 123 |
| 1996 | 83 | - | 46 | 79 | 41 |
| 1997 | 86 | - | 83 | 75 | 18 |
| 1998 | 82 | - | 62 | 73 | 14 |
| 1999 | 70 | - | 52 | 73 | 12 |
| 2000 | 71 | - | 42 | 66 | 17 |
| Ø1996-2000 | 78 | - | 57 | 73 | 20 |
| 2006 | 40 | - | 18 | 29 | 42 |
| 2007 | 35 | - | 15 | 19 | 46 |
| 2008 | 33 | - | 13 | 16 | 43 |
| 2009 | 28 | - | 13 | 10 | 40 |
| 2010 | 22 | - | 10 | 8 | 40 |
| Ø2006-2010 | 32 | - | 13 | 16 | 42 |

*Source:* Author's calculation based on data from Table 3.

Therefore, in the process of privatization, social position and status of the vast majority of workers not only worsened but became endangered to the lowest existential level.

On the other hand, the minority benefited. Consequently, domestic production reduced, import dependence increased, GDP structure imperiled. That is why the policy of privatization proved to be a wrong, socially unjust and immoral concept. (Stevanović et al., 2011)

## Import dependence in foreign trade of agrarian inputs

The volume, structure and conditions of foreign trade of agro-food products change significantly in time and space. In so called pre-transitional period, the unstable primary agricultural production, radical changes in domestic market, prohibitions and exterior foreign trade limits, forced adaptation of the inner economic system with the character of arbitration and foreign trade restrictions, were not the elements of favorable but of undoubtedly, immensely unfavorable development climate. Under such circumstances, agro-industrial export could have had more serious and more stable results.

Agriculture and its market in Serbia, in the first decade of 21$^{st}$ century are characterized by stagnation, declining trends, non-stability and regional differences in production volume and structure. Such trends, regarding the period taken and general conditions of privatization, liberalization and deregulation, can be called transitional distortion of agriculture and its market. (Milanović, Đorović, 2011)

During the transition, Serbia experienced complete deindustrialization, by which the level of industrial development has been reduced to 30-60% of the level of the 1980s. The 1999 NATO bombing of military and, to a significant extent, industrial capacities was an introduction into the headlong fall of the industry at the beginning of 21$^{st}$ century, when its share was reduced from 20.2% in 2002 to merely 15.9% in 2009. (Stevanović et al., 2013)

**Table 5.** The importance of agrarian inputs for Serbian foreign trade balance 2005-2011

(mill. US $)

| | | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|
| 1. | Food products export | 927 | 1,275 | 1,696 | 1,974 | 1,957 | 2,255 | 2,722 |
| 2. | Agrarian inputs export | 58 | 48 | 72 | 134 | 70 | 91 | 134 |
| 3. | Agrarian export-total (1+2) | 985 | 1,324 | 1,768 | 2,108 | 2,027 | 2,346 | 2,,858 |
| 4. | Inputs share in agrarian export (2:3) | 5.9 | 3.6 | 4.1 | 6.4 | 3.4 | 3.9 | 4.7 |
| 5. | Food products import | 825 | 960 | 876 | 1,169 | 1,047 | 1,084 | 1,461 |
| 6. | Agrarian inputs import | 317 | 377 | 394 | 585 | 388 | 302 | 540 |
| 7. | Agrarian import-total (5+6) | 1,142 | 1,337 | 1,270 | 1,754 | 1,435 | 1,386 | 2,001 |
| 8. | Inputs share in agrarian import (6:7) | 27.7 | 28.2 | 31.0 | 33.5 | 27.0 | 21.8 | 27.0 |
| 9. | Inputs balance (2– 6) | -259 | -329 | -322 | -544 | -318 | -211 | -406 |
| 10. | Serbian export - total | 4,482 | 6,428 | 8,825 | 10,974 | 8,344 | 9,795 | 11,777 |
| 11. | Serbian import - total | 10,461 | 13,172 | 19,164 | 24,331 | 16,056 | 16,735 | 20,139 |
| 12. | Share of agrarian in total export (%) | 22.0 | 20.6 | 20.0 | 19.2 | 24.3 | 23.9 | 24.3 |
| 13. | Export coverage of import (%) | 42.8 | 48.8 | 46.0 | 45.1 | 52.0 | 58.5 | 58.5 |
| 14. | Export coverage of agrarian import (%) | 86.2 | 99.0 | 139.2 | 120.2 | 141.3 | 169.3 | 142.8 |
| 15. | Export coverage of inputs import (%) | 18.3 | 12.7 | 18.2 | 22.9 | 18.8 | 30.1 | 24.8 |

| 16. | Inputs share in total export (%) | 3.0 | 2.9 | 2.0 | 2.4 | 2.4 | 1.8 | 2.7 |

*Source:* Statistical Office of the Republic of Serbia, Belgrade, *Bulletin Industry*; data bases: www.statserb.gov.rs

The long-term dynamics of total agricultural production in Serbia, in the last twenty years or more, shows cyclic instability, stagnation or a very slow increase, with significant differences between crop production (slight increase) and livestock farming (continuous decrease). (Milanović, 2011)

That inevitably strikes the foreign trade in agro-food sector, which generally has the tendency of extending. Contrary to the expectations and proclamations, constant increase in the share of the primary in comparison with the products of high finalization is noticed.

Food products (in sectors 0-Food and livestock, 1-Drinks and tobacco, chosen products from sector 2-Raw materials, 4-Animal and vegetable oils and fats) and of agricultural inputs (defined in the Introduction), significantly influenced the total foreign trade, at the end of the last decade. Unfortunately, disparity featured it for many years. That negative balance reached $13.3 billion (2008), before the so-called world economic crisis.

**Table 6** Agrarian inputs import, 2005-2011($ million)

| Group | Name | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|
| 721 | Machines for agriculture | 53 | 62 | 56 | 75 | 41 | 38 | 73 |
| 722 | Tractors | 25 | 36 | 22 | 27 | 10 | 11 | 74 |
| 727 | Machines for food production | 30 | 33 | 30 | 49 | 23 | 15 | 28 |
| **I** | **Equipment-total** | 108 | 131 | 108 | 151 | 74 | 64 | 175 |
| 5911 | Insecticides | 10 | 10 | 7 | 12 | 9 | 10 | 15 |
| 5912 | Fungicides | 13 | 15 | 10 | 13 | 10 | 11 | 21 |
| 5913 | Herbicides | 34 | 35 | 22 | 45 | 34 | 24 | 40 |
| **II** | **Pesticides - total** | 57 | 60 | 39 | 70 | 53 | 45 | 76 |
| 27 | Raw fertilizers | 52 | 55 | 47 | 54 | 43 | 46 | 69 |
| 56 | Fertilizers | 100 | 131 | 199 | 310 | 219 | 147 | 220 |
| **III** | **Fertilizers - total** | 152 | 186 | 247 | 364 | 262 | 192 | 289 |
| | **INPUTS - TOTAL** | 317 | 377 | 394 | 585 | 388 | 302 | 540 |

*Source:* Author's calculation based on data from the Statistical Office of the Republic of Serbia.

The seriousness of the problems in foreign trade and Serbian economy can be illustrated with the fact that the total foreign trade balance surpasses many times the total agrarian export ($2.1 billion), a development prospect of export economy.

Agrarian export was steadily increasing in the last seven years, reaching (so far) the record of $2.8 billion (2011), which makes a quarter of the total Serbian export. However, the inclusion of agrarian inputs trade - equipment, pesticides, fertilizers (total annual import is over half a billion dollars) in the agrarian foreign trade balance,

significantly changes the idealistic prospect offered merely on the basis of export.

If the agrarian export is determined by aggregation of the exports of agricultural and food products and of agrarian inputs (as previously described), the value of inputs export (about $50-130 mill. a year) is marginal (3-6%). However, if agrarian import is analyzed in a similar way, the picture is completely different: the share of total inputs import reaches about 1/3 of the value of agrarian import.

A more detailed insight into the values of inputs import is given in Table 6. The annual value varies a lot, from $300 million to $580 million. The least value is of pesticides (up to $75 mill.), then machines import (between $70 mill. and $175 mill.) while the largest outflow was on imports of fertilizers (over $360 mill. a year).

Economic importance of agrarian inputs import, besides absolute values, can be observed more thoroughly in the context of sector structure of the total agrarian import (*Table 7*) and export as well.

**Table 7** Inputs share in the agrarian import structure, 2005-2011 (%)

| Sector | Name/group of products | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|
| 0 | Food and animals | 54.3 | 50.7 | 53.1 | 50.9 | 54.0 | 57.9 | 54.1 |
| 1 | Drinks and tobacco | 10.6 | 12.5 | 7.4 | 6.4 | 8.4 | 8.7 | 10.2 |
| 2 | Raw materials (only 21, 22 and 29) | 4.2 | 4.4 | 5.0 | 5.5 | 6.5 | 8.0 | 5.5 |
| 3 | Vegetable and animal oils and fats | 1.7 | 2.9 | 2.3 | 2.8 | 3.2 | 2.9 | 2.3 |
| I | Agricultural and food products-total (0+1+2+3) | 70.8 | 70.5 | 67.8 | 65.5 | 72.1 | 77.5 | 72.0 |
| **II/1** | **Equipment for agriculture** | **10.0** | **10.3** | **8.9** | **8.9** | **5.3** | **4.8** | **9.1** |
| 721 | Machines for agriculture | 4.9 | 4.8 | 4.6 | 4.4 | 3.0 | 2.8 | 3.8 |
| 722 | Tractors | 2.3 | 2.8 | 1.8 | 1.6 | 0.7 | 0.8 | 3.8 |
| 727 | Machines for food production | 2.8 | 2.6 | 2.5 | 2.9 | 1.7 | 1.1 | 1.5 |
| **II/2** | **Pesticides** | **5.2** | **4.7** | **3.2** | **4.1** | **3.8** | **3.4** | **3.9** |
| 5911 | Insecticides | 1.0 | 0.8 | 0.6 | 0.7 | 0.6 | 0.8 | 0.8 |
| 5912 | Fungicides | 1.2 | 1.2 | 0.8 | 0.8 | 0.7 | 0.9 | 1.1 |
| 5913 | Herbicides | 3.1 | 2.8 | 1.8 | 2.7 | 2.4 | 1.8 | 2.1 |
| **II/3** | **Fertilizers** | **14.0** | **14.5** | **20.1** | **21.4** | **18.8** | **14.4** | **15.0** |
| 27 | Raw fertilizers | 4.8 | 4.3 | 3.8 | 3.2 | 3.1 | 3.5 | 3.6 |
| 56 | Fertilizers (except for the raw ones) | 9.2 | 10.2 | 16.3 | 18.3 | 15.7 | 10.9 | 11.4 |
| **II** | **Inputs - total** | **29.2** | **29.5** | **32.2** | **34.5** | **27.9** | **22.5** | **28.0** |
| **III** | **Agrarian - total ( I + II)** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** |

*Source:* Author's calculation based on data from the Statistical Office of the Republic of Serbia. In every open economy, there is intro-industrial foreign trade where sector 0-Food and livestock (with over 50%) is, naturally, dominant.

The shares of other products are between 22% and 35% of agrarian import, pesticides about 5%, equipment about 10% and most of all, fertilizers 15 – 20 percentage points. Therefore, the agrarian inputs import surpasses the import in the sectors Drinks and tobacco, raw materials, Animal and vegetable oils and fats.

The importance of agrarian inputs import can also be observed in the relation between agricultural and food products export (without agrarian inputs export) and agrarian inputs import. Another dimension of the importance of imports of agricultural inputs can be viewed via the unit load of exports, i.e. the ratio of the value of exports of agricultural and food products (excluding exports of agricultural inputs) and the value of imports of agricultural inputs. In the last seven years (2005-2011), the average annual value of agricultural and food products export was about $1,830 million and of agrarian inputs about $415 million. This means that on each agricultural export value unit, 0.23 units of agrarian inputs was imported. Moreover, the value of fuel for machines was not taken into account.

All the facts mentioned above open questions about comparative advantages of export (Pelević, 2004) and affect the common opinion about the superiority of Serbian agrarian export.

## Conclusions

The analysis of reindustrialization potential of agro-complex includes all important segments of industrial activities whose products as inputs, are intended exclusively for agriculture and food production. On one hand it also includes the trends in production and employment, and on the other hand, the trends in volume and structure of agrarian inputs import.

In all of the five analyzed subgroups of activities, a rapid decline, even termination of the production of most important agrarian inputs took place in some cases. The production of machines for food industry is almost terminated; the production of tractors and other machines for agriculture is reduced by 20 times; pesticides production fell to 1/10 and fertilizers production to 1/3 of the former volume.

In the mid '80s, there were about 30,000 employees in agrarian inputs industry and in 2010 there were about 2,600. Therefore, only in the agrarian inputs industry 27,500 workplaces were abolished during the 'transition'.

Agrarian export was increasing continuously in the last seven years, reaching the record of $2.8 billion (2011), which makes ¼ of total Serbian export.

The involvement of agrarian inputs trade (with the total annual import of over half a billion dollars) significantly changes foreign trade balance: the share of total inputs import reaches 1/3 of agrarian import value. On each unit of export value, 0.23 unit of agrarian inputs (machines, pesticides, fertilizers) were imported. Another dimension of the importance of imports of inputs can be seen from a unit load of exports: each unit value of export of agricultural products, on average, 0.23 unit values of basic

agricultural inputs (machinery, pesticides, fertilizers) were imported. Thus, every euro of export needed around ¼ Euro of inputs import (the value of the fuel for the machines for agriculture was not taken into account).

The structure of agrarian foreign trade is getting worse: the share of raw materials and primary, unprocessed products in the export is increasing, along with the import of final products which could be made from domestic exported raw materials; domestic production is declining and agrarian inputs import is increasing.

From macroeconomic point of view, all that raises a question of opportunity costs of Serbian agrarian export.

The leading position of grains in the export tells a lot about comparative advantages and at the same time implies negative aspects of production factors usage (land, labour, capital): the lowest added value is obtained per surface unit; the products that engage little labour force (few domestic workplaces) but a lot of capital in machines and other inputs (from import) are exported. This also engages loans (from foreign banks).

Contrary to the theory of comparative advantages, the abundant factors (land and labour force) are not used enough but the factors in minimum (capital) instead. This means that, contrary to the theory of comparative advantage, factors which are in abundance (land and labor) are underused and the use of factors in a minimum (capital) is enforced.

Reindustrialization potential of agro-complex was analyzed through quantification of two connected negative economic flows: 1) as lost domestic production of agrarian inputs and lost workplaces in certain industry branches and 2) as the decline of foreign trade and considerable foreign exchange spending on agrarian inputs import (a consequence mainly of domestic production termination).

It is assumed that these flows could be directed towards reindustrialization of Serbian economy. They could be regarded as opportunity costs of Serbian agrarian economy because they cease natural and other comparative advantages of Serbian agriculture to a great extent.

Agriculture-industry reproductive input-output relations, through such negative flows, prove that domestic agriculture is indirectly in the function of development and employment not in domestic but in foreign industry instead.

That is certainly a problem not only of agrarian policy and the strategy of agrarian development but of conception and strategy of development on the whole, in post-transitional period.

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# AGRARNI POTENCIJALI U REINDUSTRIJALIZACIJI SRBIJE
## - potrebe i mogućnosti revitalizacije industrije agrarnih inputa -

*Milan R. Milanović[6], Simo Stevanović[7], Bojan Dimitrijević[8]*

### Rezime

*Nakon tranzicionih neuspeha i promašaja, strukturne degradacije i recesije, reindustrijalizacija se nameće kao nužna etapa u privrednom razvoju Srbije. Proizvodno-tržišni potencijali agrokompleksa (kao složenog privrednog subsistema predfarmskih, farmskih i postfarmskih delatnosti) i njegovo mesto u nacionalnoj ekonomiji, otvara značajne mogućnosti revitalizacije industrija agrarnih inputa (poljoprivrednih mašina i opreme, mineralnih đubriva i pesticida). Sagledavajući strukturni značaj predfarmskog agrarnog sektora u srpskoj ekonomiji, u radu se analiziraju osnovna obeležja proizvodnje i spoljnotrgovinske razmene, posebno dinamika i promene obima i strukture proizvodnje i uvoza agrarnih inputa. Na toj osnovi se, ciljnom komparativnom analizom višegodišnjih serija podataka (1986-2011), u radu se istražuju trendovi proizvodnje i zaposlenosti, identifikuje uvozna zavisnost, sagledavaju agrarni potencijali u mogućoj reindustrijalizaciji i ukazuje na poseban fenomen oportunitetnih troškova agrarnog razvoja Srbije.*

***Ključne reči:*** *poljoprivreda, agrarni inputi, uvozna zavisnost, oportunitetni troškovi.*

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# COMMERCIAL BEHAVIOUR OF SMALLHOLDER POTATO PRODUCERS: THE CASE OF KOMBOLCHAWOREDA, EASTERN PART OF ETHIOPIA

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## Abstract

*Meeting the challenge of improving rural incomes in Ethiopia will require some form of transformation of the subsistence, low-input and low-productivity farming systems to agricultural commercialization. In the process, commercial production of high value food crops like potato would have been expected. Nonetheless, in the study area, Kombolcha Woreda, the extent to which farmers have commercialized potato production was not known. This study was then undertaken to analyse the extent to which potato was oriented towards the market (denoted by commercialization index) and identify the factors affecting commercialization of potato. A multi-stage sampling technique was used to select 130 sample households from six sample kebeles. In the study, both primary and secondary data sources were used. Results showed that potato production was lucrative and semi-commercialized i.e. about 59.50% of the potato produce were sold. Moreover, the two limit-Tobit regression model results indicated that non/off farm income, access to information, access to improved seed and access to irrigation affect proportion of the value of potato sold positively and significantly while number of plots affects it negatively. Hence, policies should emphasis on reducing land fragmentation, creating awareness on non/off farm employment, and offer improved seeds and irrigation facilities to farmers and access information.*

***Keywords****: Commercialization, commercialization index, potato, profitability, two limit Tobit*

**JEL:** *D22, O13, Q12, Q13*

## Introduction

The economy of Ethiopia remains highly dependent on agriculture, which contributes about 41 percent of GDP, 83 percent of employment and 90 percent of exports (EEA, 2012). Smallholder agriculture remains an important source of livelihoods for a majority of the rural population. It serves as a livelihood strategy for poor people engaged in production and marketing of agricultural produces. However, Ethiopian agriculture is dominated by subsistence, low input-low output; rain-fed farming system (MoARD,

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2010). Most smallholder farmers in Ethiopia still cultivate using hoe technology and rely heavily on family labour. The farming system is focussed on producing food staples to meet subsistence needs. In many parts of the country, market participation of smallholder family farms are limited and agricultural markets are fragmented and not well integrated into wider market systems, which increases transaction costs and reduces farmers' incentive to produce for the market (Bezabih, 2010, Mitku, 2014). As a result, the livelihood and food security situation of the rural population is getting unstable; and smallholder farmers remain prone to income risk. Thus, with the ever-increasing population and the limited farmland, meeting the challenge of improving rural incomes will require some form of transformation of the subsistence, low-input and low-productivity farming systems to agricultural commercialization.

Commercialization of agriculture involves a transition from subsistence-oriented to increasingly market-oriented patterns of production and input use. It may be defined as the proportion of agricultural production that is marketed and can be measured along a continuum from zero (total subsistence-oriented production) to unity (100% of production is sold) (Timmer, 1997; Pingali, 1997). Commercialization of agriculture is more than whether or not a cash crop is present to a certain extent in a production system rather it can occur either on the output side of production with increased marketed surplus or on the input side with increased use of purchased inputs. Commercialization is the outcome of a simultaneous decision-making behaviour of farm households in production and marketing (von Braun, Kennedy, 1994) thus, enhancing the links between the input and output sides of agricultural markets (Berhanu, Moti, 2010). It intensifies the use of productivity enhancing technologies on farms, achieve greater output per unit of land and labour expended, produce greater farm surpluses, expand participation in markets and ultimately raise incomes and living standards (Jayne et al., 2011), especially for households that are poor and/or own little land (Rao, Qaim, 2011), thereby realizing poverty reduction and rural development. Besides, commercialization satisfies the rapid growth in consumer demand for affordable, high quality and local produce.

The transformation process from subsistence to semi-commercial and then to a fully commercialized agriculture requires product choice and input use decisions based on the principles of profit maximization. Commercial reorientation of agricultural production occurs for the primary staple cereals as well as for the so-called high value cash crops (Pingali, Rosegrant, 1995). As a strategy, Ethiopia has adopted commercialization of smallholder agriculture for its economic transformation and the agricultural services of extension, credit and input supply are expanding significantly to support commercial transformation, although the dominant player in these services remains to be the public sector (Berhanu, Moti, 2010). Accordingly, farmers have the intention to commercialize high value food crops. One of the more potential and profitable food crops than many others is potato.

As a food crop, potato has a high potential to supply quality food within a relatively short period, which in turn plays an important role in contributing to the household food security, nutritional value; generate income and employment opportunities for the poor households.

Ethiopia is one of the principal potato producing countries in Africa and probably displays a unique position for having the highest potential area for cultivating potatoes (EARO, 2000). The area under potato production in Ethiopia in the year 2013/14 was about 66,745 hectares with an average national yield of 117 quintal per hectare for the main cropping season. Out of this, the produce in East Hararghe covered 2,207.12 hectares of land with an average yield of 193 quintal per hectare (CSA, 2014). Eastern Hararghe (Haramaya,and Kombolcha Woredas) is one of the major potato producing areas in the country (Bezabih and Hadera, 2007). In addition to satisfying domestic demand, the potato produce in the region is being exported to regional markets like Djibouti and Somalia, and Middle East countries and the Western European countries (Fekadu, Dandena, 2006;EHDA, 2011). For instance, out of the total volume of potato marketed to Somalia, 75 percent is supplied from East Hararghe and about 25 percent from the central part of Ethiopia (Bezabih, 2008). However, the supply is neither sufficient nor constant to satisfy the demand for the market at both market outlets (Bezabih, 2010; Mahlet, et al., 2015). Thus, the production level of the sector requires further expansion to narrow down the gap between the available supply and the demand for domestic and international markets.

Studies on potato (Bezabih, Hadera, 2007) have shown that, given the availability of favourable climatic conditions and irrigation potential of the area, many of the farmers in Kombolcha Woreda are producing potato and supplying for domestic markets like Harar town and Dire Dawa administrative city and neighbouring countries like Somalia-Mogadishu. The smallholder farmers in the Woreda are making profit (Bezabih, 2010), though the profit margin is unfairly low compared to traders. Despite the fact that, in the study area, Kombolcha Woreda, the extent to which farmers have commercialized potato production was not known. In addition, in the area, the purpose of potato production (family consumption and/or for sale) varies from situation to situation and person to person. As such, there are tremendous factors, which influence the level of commercialization in potato production. Therefore, this study was mainly devised to find the level of potato commercialization (measured from the output side- a more prevalent way than that of the input side) and identification of factors determining proportion of potato marketed at the household level.

The findings of this study assumed to be very valuable information for further promotion of commercialization of potato production in the study area. This in turn improves the income and food security status of smallholder farmers.

## Methodology of the study

### *Description of the Study Area*

The study was conducted in Eastern Ethiopia, specifically, in Kombolcha Woreda/District. Kombolcha *Woreda*, having an area of 446.61 km², is found in the northern part of East Hararghe zone of Oromia National Regional State. It is located about 514kms southeast of Addis Ababa and 14kms North West of Harar town. Komblocha *Woreda* is bordered by Haramaya and Jarso *woredas*, Harari Regional State and Dire Dawa Administrative

council. The altitude of the Woreda extends between 1200 and 2460 masl. In the *woreda*, 7 (37%) *Kebeles* (peasant associations) are located in the lowlands (*Kola*) and the remaining 12 (63%) are located in the midland (*Woina dega)*. Rainfall is mainly bi-modal, but it can be erratic as well-the main rainy season is from February to mid-May and from July to end of August. The mean annual rainfall of Kombolcha *Woreda* ranges from 600 mm to 900 mm (KWP, 2011). The *Woreda* has a total population of about 169,313 and more than 90% of the population resides in rural areas (CSA, 2013).

In the *Woreda,* mixed farming system is practiced. The *woreda*'s farming economy is characterized by small and fragmented land holdings. The rain-fed production system is most dominant and is practiced by the majority of the farmers. However, horticultural crops are often produced using irrigation. Farmers produce different crops like sorghum, maize, wheat, haricot bean, and fruits and vegetables. The *woreda* is one of the major producers of vegetables including potato, onion, cabbage, beetroot, tomato, and lettuce (Bezabih, Hadera, 2007).

### Method of Sampling

A multi-stage sampling technique was used to collect the primary data from farmers. In the first place, Kombolcha Woreda was purposively selected since it is one of the major potato producing areas in Eastern Ethiopia. Then, six potato producing *Kebeles* in the Woreda were randomly selected. These sample *Kebeles* are *Bilisumma, Kerensa, Walta Lamaan, Kakali, Iftuha* and *Legehamma*. Within each *kebele,* potato-producing farmers were identified. Finally, 130 sample potato-producing households were selected randomly based on the proportion to the size of number of potato producer households from the selected *kebeles*. Incidentally, the formula provided by Yamane (1967) was used to determine the sample size (given in *Equation.1* below).

$$n = \frac{N}{1 + N(e)^2} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 1$$

Where, n is the sample size, N is the population size, and e is the level of precision, which equals to 9%. To apply the formula, a 95% confidence level and estimated proportion of an attribute (participation in potato sale) that is present in the population (P =0.5) are assumed for the equation.

### Method of Data Collection

For this study, both primary and secondary data sources were used. Primary data were obtained from sample farmers using structured questionnaire through interview. The data collected includes socio-economic characteristics of farmers, land holdings, farming practices, and production and marketing of potato produce. Prior to data collection training was given to the enumerators. Focus group discussions and key informant interviews were also made with community leaders, the *Woreda* marketing council and market actors in the different markets. Besides, relevant secondary data sources like reports of the Agriculture

and Rural Development Office of the *Woreda*, journals, bulletins and unpublished materials were reviewed to supplement the survey data.

## Method of Data Analysis

### Descriptive statistics

The statistical values of mean, standard deviation, percentages and ratios were used to examine and understand the socioeconomic characteristics of sample households. Besides, the profitability of potato production and marketing was evaluated. In the process, gross margin was first estimated by deducting production costs (inputs costs including opportunity costs of family labour) from the gross values of output sold. Finally, the profit per quintal and per ha was estimated by deducting marketing costs and then dividing the end value by the total output and total cultivated area in ha, respectively.

The commercialization index (CI) was also used to determine the level of potato output marketed. Here, the commercialization of potato production was assessed from the output side. Using this approach is more prevalent than from the input side. According to Bekele *et al*. (2011), Strasberg *et al*. (1999), and von Braun and Kennedy (1994) the commercialization index for potato production can be defined as:

$$C = \frac{\text{Gross value ѣ all potato sales}}{\text{Gross value ѣ all potato production}} \, x100\% \dots\dots\dots\dots\dots\dots\dots\dots 2$$

Commercialization index measures the extent to which potato production is oriented towards the market. The index measures the ratio of the gross value of potato sales by a household in a year to the gross value of all potato produced by the same household in the same year expressed as a percentage. Thus, a value of zero would signify a totally subsistence-oriented farmer while the closer the index is to 100%, the higher the degree of market orientation would be (Govereh et al., 1999; Strasberg *et al*., 1999). The advantage of this approach is that commercialization is treated as a continuum thereby avoiding crude distinction between commercialized and non-commercialized households (Agwu et al., 2013**)**.

### Econometric model

The dependent variable used to measure commercialization behaviour of potato producing sample households is commercialization index. CI is the ratio of the gross value of all potato sales to gross value of all potato production by a household.

The commercialization index is censored because some of its values cluster at the limit (i.e., 0 for subsistence producers and 1 for fully commercialized). Hence, censored regression model is the option for handling this limited dependent variable.

Censored regression models refer to a model in which the dependent variable can be observed only if it is above or below some cut off level. Tobit model is a special case of censored regression models that arise when the dependent variable is limited (or censored) from

above and/or below. Thus, since the value of the dependent variable, commercialization index, ranges between 0 and 1 inclusive, a two-limit Tobit model has been chosen as a more appropriate econometric model. The two-limit Tobit was originally presented by Rossett and Nelson (1975) and discussed in detail by Maddala (1992) and Long (1997). The two-limit Tobit model can be specified as:

$$y_i^* = \beta' x_i + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 3$$

where $y_i^*$ is a latent variable (unobserved for values smaller than 0 and greater than 1) representing subsistence or fully commercial index; $x_i$ is a vector of independent variables, which includes factors affecting output sold; β is a vector of unknown parameters; and $\varepsilon_i$ is a disturbance term assumed to be independently and normally distributed with zero mean and constant variance $\sigma^2$; and $i = 1, 2,\dots n$(n=the number of observations).

Given the observed dependent variable-commercialization index ($y_i$), the two limit Tobit model can be specified as:

$$y_i = \begin{cases} 0 & \text{if } y_i^* \leq 0 \\ y^* & \text{if } 0 < y^* < 1 \\ 1 & \text{if } y^* \geq 1 \end{cases} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 4$$

The two limit Tobit model is estimated using maximum likelihood estimation techniques. However, the Tobit coefficients cannot be interpreted directly as estimates of the magnitude of the marginal effects of changes in the explanatory variables on the expected value of the dependent variable. In a Tobit equation, each marginal effect includes both the influence of the explanatory variable on the probability of commercialization as well as on its intensity. More explicitly, the total (marginal) effect takes into consideration that a change in an explanatory variable will affect simultaneously the number of sample farmers to market their production and the extent of output sold. However, which marginal effects should be reported depends on the purpose of the analysis (Greene, 2003). Thus, in this study, the marginal effect results were computed to evaluate the significant effects of the independent variables on the extent of the output sold.

## Results and discussion

### *Socioeconomic Characteristics of the Sample Households*

The descriptive statistics results of the socioeconomic characteristics of the sample households in *Kombolcha Woreda* are presented in Table 1 and 2. As shown in Table 1, the majority (about 84%) of the respondents were male-headed households. While Table 2 shows that, the average age of the sample household heads is about 36 years and the household heads have about 13 years of potato production experience. The survey results show that 48.5% of the producers are illiterate while the remaining sample respondents are literate. It was also found that the average schooling level for sample respondents was about

three grades with a maximum of attending 12th grades. Furthermore, the result revealed that, on average, the family size of sample respondents was about 6 persons per household.

According to the results of the survey, the sample producers use improved seed, local varieties and a combination of both improved and local potato varieties for production purpose accessing from different seed sources. However, out of the total potato producing respondents, only 17.7% of them used improved seed. In the same period, about 96 % of the respondents used chemical fertilizer to produce potato. On the other hand, in the study area, farmers use irrigation in potato production during the dry seasons. The survey indicates that 76.92% of those respondents use irrigation for potato production. Most of the farmers rely on boreholes and pond for irrigation. In the region, water-pumping motor (owned or exchanging with labor service for fieldwork or just mutual assistance of the neighbours) plays a great role to undertake the irrigation.

According to the survey result, 23.8% of the sample potato-producing households had access to credit. The survey result depicts that some sample households are not willing to take loans due to religious reasons (credit is interest bearing).

Access to timely and accurate potato market information is the basic element for producers to decide how much to produce and market at what possible prices. Table 1 revealed that 50.8% of the total sample households had potato market information.

Despite the huge and extensive investment in promoting extension services in the country, the survey shows that only 59.2% of the total sample respondents received extension services on potato production. Besides, the contact of potato producers with development agents was not frequent. On average, the farmers visited an extension agent about 10 times in the previous year. Concerning the distance to the nearest market, according to the survey, the respondent farmers are expected to travel an average distance of about 7 km to reach the nearest market.

**Table 1**. Summary statistics of sample households (categorical variables)

| Variables description | Number of farmers (N=130) | Percent |
|---|---|---|
| Sex of household head | | |
| Male | 110 | 84.62 |
| Female | 20 | 15.38 |
| Educational level of household head | | |
| Illiterate | 63 | 48.50 |
| Literate | 67 | 51.50 |
| Access to improved seed(yes) | 23 | 17.7 |
| Access to chemical fertilizer(yes) | 126 | 96.9 |
| Access to irrigation (yes) | 100 | 76.92 |
| Access to credit service(yes) | 31 | 23.8 |
| Access to information(yes) | 66 | 50.8 |

Source: The author's calculations based on Survey data, 2015

**Table 2**: Summary statistics of the sample households (continuous variables)

| Variables description | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|
| Age of the household head (years) | 35.88 | 10.41 | 20 | 75 |
| Potato production experience (years) | 13.43 | 0.92 | 1 | 50 |
| Family size of the household (persons) | 5.76 | 1.92 | 1 | 11 |
| Distance to nearest market (km) | 7.41 | 7.15 | 0.001 | 22 |
| Extension contact (number) | 10.93 | 15.07 | 0 | 60 |

Source: The author's calculations based on Survey data, 2015

### *Sources of Income for the Sample Households*

The farm income is earned from different sources like sales of grains and pulses, chat and coffee, horticultural crops and sales of livestock and livestock products. The average annual farm income of the respondents was Birr 21,565.66. The survey shows that crop production is a major source of income for the majority of the producers. About 52% of the respondents earn their living from horticulture production (including potato) as a primary source. Chat (*Catha edulis*) and coffee production are used as a primary source of income for 34.6% of the households (Table 3). Grains and legume crops such as maize, wheat, sorghum and haricot beans are also used as means of livelihood.

Livestock production is limited by the shortage of grazing area and hence by critical shortage of feed. Average number of livestock for the sample households is 3.17 tropical livestock units (TLU). Only 10% of the sample respondents depend on livestock production as a major means of livelihood (Table 3).

Farmers also participate in non-farm and off-farm activities to generate supplementary income. The farmers in the area generate income from non-farm and off-farm income sources of petty trade, handicraft, daily labor, remittances, aids and working on others farms. About 20% of the sample producers stated that they participated in non-farm and off-farm income generating activities. The survey indicated that the average annual non/off-farm income of the sample households was about Birr 1,201.26.

**Table 3.** Primary source of income of sample households

| Income sources/livelihood strategies | Number of farmers (N=130) | Percent |
|---|---|---|
| Horticulture production (including potato) | 68 | 52.3 |
| Chat and coffee production | 45 | 34.6 |
| Livestock production | 14 | 10.8 |
| Grain and pulses production | 3 | 2.3 |
| Total | 130 | 100 |

Source: The author's calculations on the basis of Survey data, 2015

### *Land Allocated for Potato Production*

The smallholder farmers' livelihood in Kombolcha Woreda relied on small and fragmented plots. On average, sample respondents have about three plots. According to the survey, the average landholdings of the respondents in the Woreda is less than a hectare (0.36 ha on average). Of these, an average of above 0.20 ha of the land is suitable for irrigation (is irrigable area). Overall, the survey results indicate that the proportion of land that is allotted to potato production was about 28.46%. This makes potato a potential vegetable crop around this area.

From the commercial point of view, the average landholding under production was too small to provide any meaningful output for business purposes. However, since the crop is productive and profitable, farmers would increasingly allocate more land to it. This in turn makes commercial potato production more plausible.

### *Profitability of Potato Production*

According to the survey, the average potato production in the region is about 155 quintals per ha. The information from focus group discussions with traders indicated that, in three production cycles of the year, about 300,100qt of potato was marketed in *Kombolcha*. Besides selling in *Kombolcha*, smallholders have alternatives to directly sell their produce including Dire Dawa, Harar and Awodey markets while traders have been involved in both the domestic and export markets. This analysis has assumed all possible markets that the produce can be sold. Based on the survey data, the profitability of production and marketing of potato produce was computed both at per quintal and per ha basis.

The study results revealed that the cost of producing potato in *Kombolcha* is about Birr 62per quintal and Birr 8,100 per ha. The gross margin of potato is estimated to be Birr 13,900 per ha. Deducting average marketing costs results in a profit of Birr 10,980 per ha for production and marketing of potato. On the other hand, the profit accruing to the farmer by producing a quintal of potato is Birr 97.80. This means potato production in *Kombolcha Wordea* is a profitable venture.

### *Commercialization Behaviour of Potato Producers*

Potato is the most commonly grown crop in Kombolcha area in three production cycles. In Cycle I (February to April) and Cycle III (November to January) potato is produced using irrigation while in Cycle II (May to October) potato is produced using rainfall. The production may primarily be meant for consumption or for market.

Some farmers usually produce certain crops for home consumption and some specific crops for sale (Bekele *et al.*, 2011). In this case, the commercial orientation of farmers should be measured with reference to a specific crop rather than the farmer, in general. Thus, this study judged the commercial behaviour of smallholder farmers in potato production using commercialization index. The index was constructed based on productions at the household level. The findings of this study showed that commercialization index for

sample potato producers was 59.50%. This implies that, on average, 59.50% of all potato produce was sold. While the remaining output was either consumed or stored as seed tubers for the next season. According to Bekele *et al*. (2011) and Strasberg *et al*. (1999), a crop commercialization index greater than 50% signifies a commercial oriented farmer for a crop under consideration. Since the commercialization index for this study was about 59.50%, then more than half of the potato was produced for sale. The figure indicated that potato production was semi-commercialized. However, the commercialization index of potato was considerably greater than Oromia National Regional State average index (which is 15%) and the country average index (which equals to 13%) as the study by Pender and Dawit (2007) stated.

### *Determinants of potato commercialization*

The commercial behaviour of potato producers was measured by commercialization index, which is the ratio of the value of potato sold to the value of all potato, produced in the area in a production year. There are different factors that determine the market oriented behaviour of smallholder farmers in potato production. These determinants were analysed using the two-limit Tobit regression model. The results of the regression are given in Table 4.

**Number of plots:** this variable is a proxy for land fragmentation. It is negative and significant at 10% showing that the amount of potato sold decreases as the number of plots increases. Highly fragmented and small parcel size hinders agricultural mechanisation and may require an excessive amount of manual work in the corners and along the boundaries (Burton, 1988), makes supervision and protection of the land difficult, long distances to farms that make labour more costly, loss of working hours, the problem of transporting agricultural implements and products; and results in small and uneconomic size of operational holdings (Bizimana et al., 2004), causes inefficiencies in production and involves large costs to alleviate its effects (Thomas, 2006; Tan *et al*., 2008). As a result, agricultural productivity and hence income are reduced (Karouzis, 1971). Thus, with a small size and fragmented landholding, production for market would be very difficult. This implies as land fragmentation increases, commercialization orientation of potato decreases. As indicated by the marginal effects, an increase in the number of plots by one will reduce the probability of the proportion of potato marketed by 5.85% on average.

**Non/off farm income:** Financial income from non-potato sources had positive effect on commercialization of households and was found to be significant at 5% probability level. The positive relationship between the variables indicated that any additional financial income increases the proportion of potato marketed by households. Since off-farm and non-farm income is realized mostly off the season, the involvement in non/off farm activities may enable the farmer to get additional cash income in such a manner that enables the farmer to purchase improved inputs. Moreover, the application of new technology, mainly improved inputs would result quality product, which makes the farmer more competent in the market. Therefore, off/non farm income would improve the benefit from such transactions and encourages the farmer to sell more of potato produced. The marginal effect of the variable also emphasizes that for every increase in one Birr from non-off

farm income, the probability of the proportion of potato marketed by the household would increase by 0.001%.

**Access to market information:** Information access is also another factor, which positively affects the proportion of potato sold at 10% significance level. This result suggested that the proportion of potato marketed increases in response to access to potato market information. Access to information are expected to enhance skills and knowledge of farmers, link farmers with modern technology, and ease liquidity and input supply constraints (Lerman, 2004), thus are expected to induce market orientation(Berhanu, Moti, 2010). The marginal effect of the variable shows that access to market information to potato producers will increase the probability of proportion of potato sold by 11.84% on average.

**Access to irrigation:** is measured as the proportion of area irrigated, which was found to be affecting potato commercialization significantly and positively at 1% probability level. Access to irrigation refers to the physical availability/limitations of irrigation water. Where irrigation is practiced, it allows the extension of the farming season beyond the rainy season. This means farmers having access to irrigation have opportunities to grow potato throughout the year and the produce would be over and above home consumption. This in turn results in farmers having access to irrigation can bring higher proportion of their potato produce to market. Hence, an increase in irrigated area will increase the proportion of potato marketed.

**Access to improved seed:** is a dummy variable, which was found to be affecting the commercialization index positively and significantly at 10% significance level. Access to improved seed improves the productivity and quality of output. The increase in productivity brings additional output over and above home consumption. As a result, higher proportion of the output would be supplied to market. As indicated by the marginal effect, access to improved potato seed will increase the probability of the proportion of the value of potato sold by 8.46%.

**Table 4.**Parameter estimates of two-limit Tobit model for commercialization index

| Variables | Coef. | Std. Err. | Marginal effect |
|---|---|---|---|
| Sex (1=male, 0=female) | -0.0449 | 0.0745 | -0.0439 |
| Age (years) | -0.0024 | 0.0024 | -0.0024 |
| Education | -0.0030 | 0.0066 | -0.0029 |
| Landholding (ha) | -0.1122 | 0.1291 | -0.1093 |
| Family size | -0.0035 | 0.0130 | -0.0034 |
| No. of plots | -0.0648* | 0.0345 | -0.0585 |
| Total value of potato produced | 2.53e-07 | 1.15e-06 | 2.46e-07 |
| Livestock size | -0.0083 | 0.0214 | -0.0075 |
| Non-off farm income | 0.00001** | 5.92e-06 | 0.00001 |
| Irrigation access | 1.2530*** | 0.0914 | 1.2197 |
| Access market information | 0.1218* | 0.0617 | 0.1184 |
| Improved seed (1=yes, 0=no) | 0.0870* | 0.0490 | 0.0846 |
| Distance to market | 0.0055 | 0.0043 | 0.0053 |
| Extension contact | 0.0017 | 0.0017 | 0.0017 |

| | | | |
|---|---|---|---|
| Constant | 0.3423*** | 0.1279 | |
| Sigma | 0.2042 | 0.0163 | |

Number of observation =130          LR chi²(14) = 200.45

Prob> chi²          =0.0000          Log likelihood = -9.7731

Pseudo R² = 0.9112

Note: ***, ** and * indicate significance at 1%, 5% and 10% levels, respectively.

Source: model output based on survey data, 2015

## Summary and recommendations

The objective of this study was to provide empirical findings of commercial behaviour of smallholder potato producers and investigating the factors that affect market orientation/commercialization of smallholder farmers in Kombolcha *Woreda*. The descriptive statistics results showed that the proportion of land that was allotted for potato cultivation was about 28.46% of the total land under cultivation. The profitability analysis indicated that potato production in the region is a rewarding avenue. This study also found that potato production in the *Woreda* was semi-commercial. This was evidenced by the commercialization index. About 59.50% of the potato produce was sold. This implies that farmers produced potato both for home consumption and for the market.

Moreover, in this study, the factors that affect commercialization of potato were analyzed using two-limit Tobit regression model. The model results indicated that, non/off farm income, access to information, access to improved seed and access to irrigation determine the proportion of the value of potato sold positively while number of plots affects it negatively and significantly.

The result of the survey indicates that, though potato has been produced in the district and is profitable; it needs further attention to achieve the required commercial stage. Hence, to promote the realization of commercialization of the sector, policies should reduce the problems of land fragmentation through encouraging land consolidation, voluntary parcel exchange and cooperative farming. Likewise, creating awareness on the importance of non/off farm employment as alternative source of financing/income, delivery of appropriate farm inputs/ improved seeds and construction of irrigation facilities should be given more emphasis to increase the volume of potato marketed. Moreover, up to date market information should be accessible for farmers.

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# THE STRATEGIC ASPECTS AND RESULTS OF AGRICULTURE DEVELOPMENT IN SERBIA IN THE TRANSITION PERIOD

*Jugoslav Aničić[1], Svetlana Vukotić[2], Svetozar Krstić[3]*

## Summary

*The economic development in Yugoslavia (Serbia) after the second world war has been conducted at the expense of agriculture because the industrialisation was in the forefront of the economic policy. It has an impact on the present position of the agriculture compared to the other sectors because the parity of product exchange is still retained at the expense of agriculture. Even under these circumstances agriculture is an industry with a positive foreign trade balance, important share in the national product and the unemployment rate reduction, and that has been analysed and shown in this paper. Many developed European countries are an example of the successful agricultural development as a carrier of the complete development. There are indisputably much wider possibilities for agriculture development in Serbia, and it could become a great comparative advantage of our economy in the developed markets in the world, with the appropriate macroeconomic policy.*

***Key words:*** *agriculture, development, economic policy, business results, company*

**JEL:** *Q18, Q13*

## Introduction

The importance of agriculture as an industry is indisputable in every period, transition period included. When it comes to Serbia, we are the witnesses of the constant stress on the importance of agricultural production, reflected in various syntagma ranging from the lever of the complete economic development to one of the pillars marking the possibility for the progress of the whole country. All these things are especially intensified by the challenge to see agriculture as a competitive advantage that Serbia could make use of because of favourable natural conditions.

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According to Pejanović and associates (2006), the transition in agriculture means a process of transition from the (previous) present model of (agriculture) economy to a new market economy concept, modelled upon the developed countries of the European Union. This transitional period took place in two phases during the first decade of the 21st century: the first one marked by privatisation and restructuring, and the other one by creating a stimulative macroeconomic environment, especially in the investment area. Disturbing factors in reaching these objectives were unavoidable, caused by the 2008 global financial crisis overflow. One of the positive shifts was in 2012, after half a century, when a list of agricultural holdings and their structure was made.

At the time of the beginning of the European integration process, the imperative imposed is approaching the European model of economy. Therefore, the Strategy of Agriculture and rural development of the Republic of Serbia for the 2014-2024 period defines three most important reform segments: 1. Agricultural policy reform; 2. Legislation adoption and complete application; 3. Institutional reforms. It is important to mention the importance of implementation for the segments proposed and defined.

From all the above mentioned arises the need to analyse, compare and show the achieved results of agriculture development, and they are the topic of this paper. The paper is conceived in three key parts. The first one defines the role and importance of agricultural production as an industry. The next is about macroeconomic indicators, the relations of agricultural production with other industries and structures. The final part is about business results of the companies in agriculture.

The objective of this paper is to indicate the need for policy, programme and initiative improvement in the function of the agriculture production opportunity increase in Serbia, to highlight agrarian role and importance, to suggest the future activities with an appreciation of experiences and good practice examples from the developed European countries. Thus, this paper can be of use to the expert public interested in these issues.

## The importance and the role of agricultural production

Agriculture represents a very important industry in every country. Agriculture is an industry which uses the land and grows useful plants and animals for obtaining the primary products of plant and animal origin, then processes them within agricultural organisations and holdings in order to meet personal and social needs. Along with forestry, hunting and fishing, agriculture makes up the primary sector of the economy.

Agricultural products are a result of the previous human work which influences life functions of plants and animals, and uses them in a manner suitable for men. Its development defines the conditions for population nutrition, rural areas employment, and it is the most important factor in manufacturing industry, tourism and trade. It also represents a very important source of raw materials and demand for many industrial products.

According to Stefanović and Broćić (2012), there are some tendencies at the global level, encouraging harmonious development and increasing food production, as well as fast,

rational and organised distribution of agricultural and food products in all parts of the world. The economic theory explains that a larger share of agricultural and food exports in the total exports of a country points to its lower level of economic development as a rule. However, there are some developed world countries where the export of these products can be a very important item in the foreign trade balance (Holland, Denmark, France, Canada, Australia).

According to Arzeni and associates (2016), agriculture will hardly reach a higher level of productivity and market success unless the complete rural industry can overcome some depression factors. The first important factor is a low level of income, decreasing local demand and investments, so there is no capital for funding of new companies or investments. The next one is the migration of young people into urban areas which causes a significant population aging. Therefore, the average level of education and improvement is decreasing. Finally, the physical infrastructure is generally poor, unsuitable and outdated, which unables easier access to markets and urban areas connections. Some of these problems are also present in the rural areas of the western Europe. However, in the transition countries, these appear all together, and cause even larger gap behind the urban areas.

Byerlee and associates (2009) point out that a new paradigm should recognise multiple functions of agriculture and its influence on the complete development. In this context, there are: economic growth, poverty decrease, lower income differences, food provision and environmental protection services. Yet, these functions of agriculture have been neglected, which resulted in its lower growth. These authors point out that 75% of the world population comes from the rural areas.

The importance of agriculture in the European Union can be observed through a few data which illustrate its part in the community`s economy. Agriculture and food industry provide over 15 million workplaces in the European Union, that is 8.3% of all employed citizens of the Union. That is an average for the whole Union, and it differs considerably from country to country. In the so-called „old" members of the EU (15 industrialised, developed western European countries) there is an average of 4%, whereas in the „new" EU members (Romania, Bulgaria, Slovakia, Hungary) there are more than 12% of the complete workforce in agriculture and the food industry (Vapa-Tankosić, Stojsavljević, 2014).

The production of agriculture's share in the European countries` GDP is 2-3%, but in the countries such as Bulgaria or Romania can be up to 10% of GDP. The total production value of agriculture in 2008 is estimated at 635 billion euros (European commission, 2012).

The falling share of agriculture in the national employment and GDP is the inevitable result of the economic progress. This is mainly due to higher elasticity in the demand for non-agricultural goods and services income. With their income growth, consumers increase produced goods and services expenditure faster than the food consumption. It is a paradox, but the process is usually followed by income growth and less common poverty among those depending on agriculture for a living (Cervates-Godoy, Dewbre, 2010).

On the other hand, according to Gulan (2016), it is expected of agriculture to bring economic

development, enlarge GDP and serve as a framework of the complete economic stability. This is due to the fact that it is a real economic sector, which directly brings close to 15 percent of domestic product, indirectly even up to 40 percent, and its share in the export of the country is 23 percent. Therefore, agriculture should not stand for the poverty, but the wealth of the country. This is the reason to encourage agricultural development in order to valorise natural, human and manufacturing capacities to the maximum, since they are only used with one-third of the possibilities.

Also, the full usage of the agricultural potential is only possible if the small agricultural producers connect to the markets in the way which enables them to reach higher income and other benefits (Zakić et al., 2014).

According to industries, the highest real growth achieved in 2013 is in agriculture (20.9%), followed by electricity supply sector (13.0%), then transport and storage sector (7.6%), and finally manufacturing industry (5.7%). The rest of the industry showed no growth (Statistical Office of the Republic of Serbia, Statistical Yearbook, 2015).

However, from the realised investment aspect, the most investments went to basic funds in the manufacturing industry sector (30.2%), construction and agriculture had the same share in the total investments-4.6% each (Statistical Office of the Republic of Serbia, Statistical Yearbook, 2015).

Regardless of all the problems agriculture brings along, it is recognised as a chance for the development, and it is also considered as the backbone of progress when Serbia is concerned. According to the share of agriculture in wealth creation, Serbia is considered as one of the most agricultural countries in Europe, with the competition, which consists of Albania, Moldavia, and Bosnia and Herzegovina (Anufrijev, Dašić, 2012).

## Agricultural policy in the transition period in Serbia

The present situation in Serbian agriculture has been considerably influenced by the condition inherited from the post-war period as well as the agricultural policy conducted in this period. As for the inherited condition, a specific fact is also the existence and development of the private as well as the public sector. The agricultural policy was directed toward public sector development, such as agricultural cooperatives and large conglomerates. These agricultural forms had larger investments, better technical equipment, more favourable workforce qualification structure, and higher work productivity as a result.

Compared to other areas of the economic system, it can be concluded that agriculture was neglected in the complete post-war period. The economic indicator of these relations is price disparities at the expense of agriculture, and they have still persisted until today. The slowdown in agriculture in the 1970s was particularly noticeable, and its lag behind the industry and other areas of the economy. Besides, there was a breakdown in the unique economic area of Yugoslavia in the 1990s, which caused even further decrease of production, closing within its own limits and general reproduction capabilities limitations.

Among the most important causes of slower agriculture growth, we can single out the following (Devetaković et al., 2009):

- Permanent unfavourable economic conditions
- Formulation and implementation of the development concept inconsistency
- Long-term applied restrictions, mainly to the private property
- Agriculture negligence, especially private sector, in the economic policy
- Lack of consistent land policy
- Slow inclusion in irrigation and land reclamation.

Company and cooperative privatisation process in agriculture was not accompanied by the appropriate procedures which led to further decline of large conglomerates as the production carriers in pre-transition period. The situation is the same with cooperatives, where the law procedures were behind the rest of the social development process.

Small and medium-sized enterprises in agribusiness should be based upon considerable investments through various forms of credits. Farmers and SMEs in agriculture have the poorest access to finances among all sectors in Serbia, which offers a poor scope of credit resources in the area of agriculture. The existing mechanisms for agriculture financing are inadequate in Serbia so the changes are necessary in the approach itself. It can be achieved with the institutional support and equity from the banks, loan associations and leasing companies. Under the circumstances, SMEs development in agribusiness should be made through smallholding development (Bogavac-Cvetković et al., 2010). Farmers and SMEs in agriculture have the poorest access to finances among all sectors in Serbia, which offers a poor scope of credit resources in the area of agriculture. The existing mechanisms for agriculture financing are inadequate in Serbia so the changes are necessary in the approach itself.

Successful companies were the first to go into privatisation, often with the monopoly creation as in the dairy industry, where more than 60% of the domestic dairies is controlled by „Salford" investment fund. In the course of the spearhead a lot of successful companies were sold-sugar refineries, breweries, water plants. Nobody took care about what should be sold, and recapitalisation as one of the best solutions for agricultural economics\agronomics completely failed. The privatisation objective should be development and agricultural economics, efficiency increase, and the profit from this sector privatisation should be directed into agronomic development projects. Of course, a large number of people lost their jobs in agriculture as well as in other industries.

The share of agriculture in total GDP has been decreasing from the start of the transition period, which is the result of faster increase in non-production sectors, mainly trade. The agriculture share in the GVA structure in Serbian economics is still very high compared to the EU countries average. It could be explained as a result of rich natural resources and favourable climate factors on one hand, or as a result of a slower economic reform process in other sectors on the other hand. In table 1, we can see that the share of agriculture in the

total employment is very high, over 20%, and that is partly attributed to a large number of seasonal and temporary jobs. The share of agriculture in the foreign trade balance is very important for Serbia, the exports ca. 23%, and the imports about 8%, with a high coverage of imports by exports.

**Table 1.** Macroeconomic indicators of agriculture`s contribution to the national economy of Serbia in 2010-2013 period

| Description | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|
| Agriculture GVA share in the total GVA % | 9.9 | 10.5 | 9.7 | 11.4 |
| The share in the total employment (%) | 22.2 | 21.2 | 21.0 | 21.3 |
| The share in the total export of goods (%) | 23.0 | 23.2 | 24.1 | 23.4 |
| The share in the total import of goods (%) | 6.6 | 7.4 | 8.3 | 8.2 |
| Coverage of imports by exports (%) | 207.6 | 185.8 | 174.5 | 178.8 |

*Source:* The strategy of agriculture and rural development of the Republic of Serbia 2014-2024

Un-competitiveness is one of the main factors influencing the crisis in the agriculture sector. Thus, export capacities should be intensified because there is evidently agriculture product underestimation and that could represent not only the chance for export, but also a comparative advantage in foreign markets.

**Pie chart 1**. The structure of agriculture export in 2014
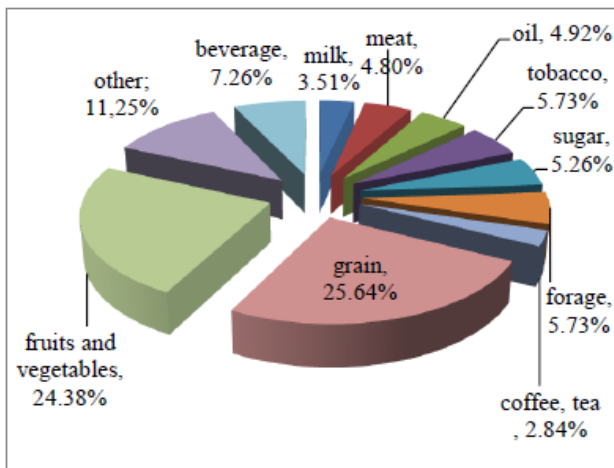


*Source:* Chamber of commerce and industry of Serbia

**Pie chart 2.** The structure of agriculture import in 2014
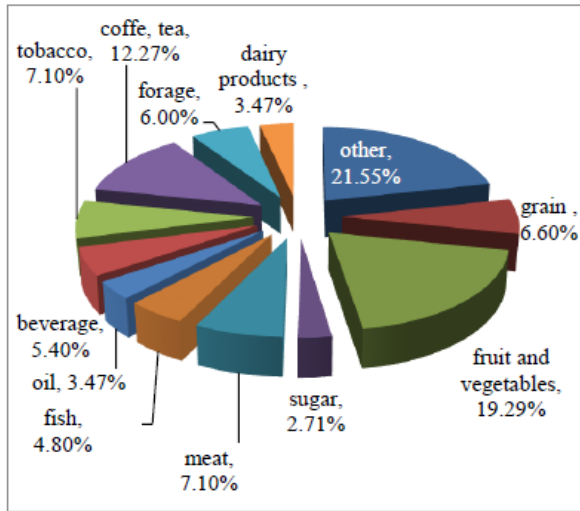


*Source:* Chamber of commerce and industry of Serbia

In the import structure itself (pie chart 2) we can see some products represented that are successfully produced in Serbia in large amounts. It often causes great disorders in the domestic production (pig farming, cattle farming, poultry farming, etc), and it is difficult to correct due to the nature of the agricultural activities, mainly animal husbandry. On the other hand, besides the fact that the import of these products is unjustified from the economic point of view, there is also an important question of health safety of the imported products because of the globalisation influence on the production processes in agriculture.

As for the structure of the agriculture production value in the period observed (Table 2) we can see that the share of animal husbandry is ca. 1/3 (one third), except in 2012 when this share was 38.1%, and the rest of the value is about crop production. Within the crop production (tillage, olericulture, pomology and viticulture) are close in relation to one another in the period observed, and the same can be said about the animal husbandry components.

**Table 2.** The structure of agriculture production value for the period 2010-2013 (%)

| Description | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|
| Gross agriculture production | 100 | 100 | 100 | 100 |
| A. Plant production | 68.91 | 68.47 | 61.9 | 67.4 |
| 1. Tillage and olericulture | 59.17 | 57.1 | 50.67 | 56.12 |
| 2. Pomology | 7.97 | 9.62 | 9.21 | 9.52 |
| 3. Viticulture | 1.76 | 1.75 | 2.03 | 1.75 |
| B. Animal husbandry | 31.09 | 31.53 | 38.1 | 32.6 |
| 1. Cattle farming | 13.45 | 13.41 | 16.58 | 13.63 |
| 2. Pig farming | 11.37 | 11.33 | 12.54 | 10.93 |
| 3. Sheep farming | 1.82 | 1.90 | 2.66 | 2.37 |

| Description | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|
| 4. Poultry farming | 4.24 | 4.71 | 5.91 | 5.25 |
| 5. Beekeeping | 0.21 | 0.18 | 0.40 | 0.42 |

*Source:* The strategy of agriculture and rural development of the Republic of Serbia 2014-2024.

A very important link of the further economic development as a whole, agriculture included, is entrepreneurship development. Entrepreneurs are economic actors who initiate things, realise, change and terminate business ventures and processes for the sake of making a profit (Kalođera, 1990). With this objective in mind, they secure capital, organise appropriate economic mechanism to reach the objective in question, start new or expand and modernise the existing companies, organise work and management, and other things. The nucleus of the sustainable entrepreneurship contains several dimensions which show the connection and penetration of the market, quality and innovation, and their conformity with the environmental needs and limitations. There are four components of sustainable entrepreneurship-ecology, market, quality and innovation-with the equal importance and strength, with the strong mutual connection and equipment (Di Castro, 1995).

Even in agriculture in Serbia there are great possibilities for entrepreneurship and SMEs development in agribusiness. The economic policy of a state should provide a favourable macroeconomic frame for a dynamic development of entrepreneurship in agriculture. The future entrepreneurs should bear in mind that the food production is cost-effective and with a good perspective. For sustainable entrepreneur and SMEs development it is necessary to create a chain leading from the producer (the one farming the land), through the institutes and industry, to the international market, that is, cluster development around national agriculture product programmes with a lot of knowledge. This is the only way to export various products made of corn rather than the corn itself, and instead of wheat and carcasses, canned food and cereals with implemented knowledge and profitability (Devetaković et al., 2009). A good way to achieve this is to connect research and development  industry sector, and to ,,wrap" them into an innovative package from the idea to market realisation with the aim of competition increase of their own product.

The area of Serbia can be highly evaluated from the agricultural land availability and arable land standpoint. The agriculture production development also favours a combination of natural conditions such as climate factors, altitude, relief, etc. There are great possibilities for biologically healthy food production and export because land quality is above the European average, water and land pollution level lower than in the European Union.

An active policy of price parities establishing, incentive mechanisms of tax, credit and other policies with the simultaneous social status, work and life conditions change for farmers, that is, its balance with non-agricultural and urban population is necessary for the further successful agriculture development. The strategy of agricultural development must be a part of the unique strategy of complete economy and society development. It is the only way to establish a basis for conducting a long-term economic policy, harmonised with other development policies, and create a foundation for their proportionate action.

## The results of company business in agriculture sector in Serbia

Business companies registered for conducting the activities in the field of economy are classified according to the Decree on the Classification of the economic activities (Official Gazette number 54/2010) to sector A-agriculture, forestry and fishing. This sector, besides manufacturing industry sector, mining, electricity and water supply, belong to the tradable sectors of the economy. The companies in this sector mainly shared the destiny of the rest of the economy in Serbia in the transition period. Insufficient BDP growth and stagnation, unfavourable macroeconomic environment, high unemployment rate, etc, also caused the results in this sector.

**Table 3.** Property and capital movement in sector A in 2010-2013 periods (millions of dinars)

| Description | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|
| Fixed assets | 275,749 | 285,883 | 321,523 | 347,173 |
| Assets | 461,470 | 471,951 | 533,290 | 561,733 |
| Current assets | 185,721 | 186,068 | 211,767 | 214,560 |
| Equity | 225,636 | 235,823 | 270,623 | 303,533 |

*Source:* Business Registers Agency, Statement on business economy in the Republic of Serbia in 2010, 2011, 2012 and 2013.

According to the data in Table 3, we can see that in the whole period observed the company capital is lower than the fixed assets, meaning that the fixed assets as the riskiest share in the assets is not covered by its own funds. Fixed asset capital coverage ratio ranges from 0.81% in 2010 to 0.87% in 2013. At the same time, the share of the current assets in the total assets was 40.24% in 2010, falling to 38.19% in 2013.

Also, the companies were over-indebted which can be seen on the basis of the data in Table 4, because the liabilities are larger that the capital. The ratio of debt by years was 1.16% (2010), 1.17% (2011), 1.14% (2012), and the situation got better in 2013 so the capital covered the liabilities.The maturity structure of liabilities was very unfavourable because there was an extremely large share of the short-term liabilities in the total liabilities of the companies, and it ranged between 76.9% in 2012 and 81.0% in 2010 and 2011. This type of liabilities structure has a negative influence on solvency, which is one of the major problems of the complete economy in the transition period. Also, these indicators show that there is no long-term source of financing in the economy, which is especially important in this sector because of its specific points.

**Table 4**. The structure of the financing sources in sector A business companies in 2010-2013 period  (millions of dinars)

| Desription | 2010 | % | 2011 | % | 2012 | % | 2013 | % |
|---|---|---|---|---|---|---|---|---|
| **I Capital** | 225,636 | 46.21 | 235,823 | 46.16 | 270,623 | 46.69 | 303,533 | 50.13 |
| **II Liabilities** | 262,639 | 53.79 | 274,999 | 53.84 | 308,936 | 53.31 | 301,957 | 49.87 |
| **Long-term** | 48,014 | 9.83 | 49,750 | 9.74 | 66,444 | 11.46 | 59,964 | 9.90 |

| Short-term | 212,956 | 43.61 | 223,155 | 43.68 | 237,029 | 40.90 | 236,255 | 39.02 |
| Delayed tax duties | 1,668 | 0.35 | 2,094 | 0.41 | 5,463 | 0.94 | 5,738 | 0.95 |
| III Total | 488,275 | 100 | 510,822 | 100 | 579,559 | 100 | 605,490 | 100 |

*Source:* Business Registers Agency, Statement on business economy in the Republic of Serbia in 2010, 2011, 2012 and 2013.

The solvency of the companies was at an unsatisfactory level in the complete period observed, because the general ratio values were under 1. It implies that the short-term liabilities were larger than the total of their current assets, supplies included. The causes of company insolvency are both of internal and external character. Among the internal ones there are: management not up to the complex economic environment demands, technology level lag, late international quality standards adoption and application, high fixed and total costs, etc. The external factors to be emphasized are unfavourable economic environment, large retail chains monopoly, government debts and tax system, as well as bank sector oligopolistic position.

There was an overflow of real sector capital into the bank sector through high interest rates and other fees that banks charge for loans to businesses. Economic policy creators and the National Bank of Serbia, although they have the necessary instruments and authorities at their disposal, have not changed such an unfavourable situation for real sector companies, even though banks from the EU do business in Serbia (Italy, Austria, Greece, France) and their interest rates are much lower. The result of these relations is also the rate of return realised on the appropriations (Table 5), ranging up to 2.6% and thus being considerably lower than the interest rates exceeding 10% in certain economic loans. This is the way to reduce economy competition in the international market in the long-term. The creation of the national development bank to be professionally and non-politically led and finance long-term projects important for complete economic development, would improve the situation considerably, especially in the sector of agriculture.

**Table 5.** The rate of return and general ratio of solvency movement in 2010-2013 period

| Year | Description | Rate of return on appropriations | General ratio of solvency |
| --- | --- | --- | --- |
| 2010 | Business companies-total | 0.2 | 0.95 |
| | Sector A: agriculture, forestry and fishing | -1.9 | 0.87 |
| 2011 | Business companies-total | 2.1 | 0.93 |
| | Sector A: agriculture, forestry and fishing | -1.0 | 0.84 |
| 2012 | Business companies-total | 0.4 | 0.95 |
| | Sector A: agriculture, forestry and fishing | 2.1 | 0.89 |
| 2013 | Business companies-total | 0.9 | 0.89 |
| | Sector A: agriculture, forestry and fishing | 2.6 | 0.90 |

*Source:* Business Registers agency, Statement on business economy in the Republic of Serbia in 2010, 2011, 2012 and 2013.

The data in the text above point to the necessity for the new agricultural policy creation, based on the modern management model and the developed European countries` experiences. These assumptions precisely define the need to specify the integral rural development policy and the necessity to innovate the existing models of organisation.

It is expected that the state should define the frame for political and institutional change. This will result in more efficient agriculture development. This policy should secure a sustainable agriculture development, environment protection and sustainable natural resources management. The results of such a policy would be production volume increase as well as a long-term competition increase in the international market.

## Conclusion

There are undisputed claims for food production increase, rational and organized distribution of agricultural and food products to all parts of the world. Disregarding the economic theory which explains that a larger share of agricultural and food products exports in the total exports of a country as a rule points to its lower level of economic development, there are many developed countries in the world where the export of these products make an important item in the foreign trade balance (Holland, Denmark, France, Canada, Australia). Agriculture can bring economic development, increase GDP and become the framework of total economic stability. Agriculture should not be a symbol of poverty, but the wealth of a country, because through it natural, human and manufacturing capacities of an economy can be valorized up to the maximum.

Agricultural development in Serbia is the result of the condition inherited from the post-war period and the agricultural policy conducted during that period. Agricultural development was mainly based on the public sector, through cooperatives and large agricultural conglomerates. Agriculture was neglected compared to industry and other economic areas in the complete post-war period, especially through price disparities at the expense of agriculture, and that is still kept nowadays. A slower agriculture growth is the result of the inconsistencies in the formulation and implementation of the development concept, as well as the neglect of the private sector in the economic policy. Regardless of that situation, we should point out the importance of agriculture in the foreign trade balance and the total employment, with regard to the problems of the debts of the country and a high rate of unemployment. Further agricultural development should be based upon the higher stage of processing products exports, entrepreneurship and SMEs development incentives in agribusiness.

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# STRATEŠKI ASPEKTI I REZULTATI RAZVOJA POLJOPRIVREDE SRBIJE U TRANZICIONOM PERIODU

*Jugoslav Aničić[4], Svetlana Vukotić[5], Svetozar Krstić[6]*

### Sažetak

*Privredni razvoj Jugoslavije (Srbije) posle drugog svetskog rata se odvijao na štetu poljoprivrede, jer je industrijalizacija bila u prvom planu ekonomske politike. To se reflektovalo na sadašnju poziciju sektora agrara u odnosu na ostale sektore jer su i dalje zadržani pariteti razmene proizvoda na štetu poljoprivrede. I u takvim uslovima, poljoprivreda je delatnost koja ima pozitivan spoljnotrgovinski bilans, značajno učešće u društvenom proizvodu i u smanjenju stope nezaposlenosti, što je analizirano i pokazano u radu. Mnoge razvijene zemlje u Evropi su primer da uspešan razvoj agrara može da bude nosilac celokupnog razvoja. U Srbiji su nesporne znatno veće mogućnosti razvoja agrara koji, uz adekvatnu makroekonomsku politiku, može da postane velika komparativna prednost naše privrede na razvijenim svetskim tržištima.*

***Ključne reči:*** *poljoprivreda, razvoj, ekonomska politika, rezultati poslovanja, preduzeće*

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# SHOPPER MARKETING STRATEGY IN FOOD RETAILING

*Zoran Bogetić[1], Dragan Stojković[2], Siniša Milošević[3]*

## Summary

*The leading role of retailers in food industry marketing channels significantly contributes to shopper marketing affirmation. Shopper marketing is a new marketing paradigm which focuses on the shopper and point-of-sale. Results of thorough literature review on shopper marketing have been presented in this paper. In addition, research methodology includes surveying 1000 shoppers in food retail stores in Belgrade area. The paper considers and analyzes the characteristics of urban food retail market shoppers, and based on the findings of the conducted research concludes that adaptation of shopper marketing strategies is necessary. Significant research finding is that shoppers' perceptions in food retail market require a profiled approach to retail store strategy adjustments, which includes shopper marketing programs and activities. The paper opens a number of questions regarding possible approaches to shopper marketing by crisscrossing the variables of retail formats, sex, and shoppers' income categories.*

*Keywords*: *shopper marketing, food retailing, shopper preferences, retail formats*

**JEL**: *M21, M31, L81, Q13*

## Introduction

Shopper marketing is a recent business concept (O'Leary, 2013) that announces a bright future of the new marketing approach focused on shoppers and also a relative deviating from the traditional consumer orientation. The new shopper marketing orientation additionally affirms the importance of the point-of-sale and related business activities, which is a kind of step forward with respect to the affirmed business concepts of trade marketing, customer relationship management (CRM), and product category management (Bogetić, Petković,

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2014). Currently, retailers undoubtedly dominate food industry marketing channels (Lovreta et al., 2013), and other participants simply adjust to them. Active efforts of suppliers are noticeable in development of partnership conceptions' (Gosselin, Bauwen, 2006), and all of this is in the function of increasing shoppers' enthusiasm (Coltman, 2007).

From the beginning of the 21st century, the traditional focus on consumers and consumption, imposed by production and distributor (wholesale) companies, has been losing its importance. A more and more prevailing shopper marketing concept is being developed, including important strategic and organizational guidelines (Sorensen, 2009/a; Sorensen, 2009/b).

Having in mind the ever growing importance of shopper marketing, the question arises whether defining a uniform shopper marketing strategy can produce the desired results or is it, in fact, necessary to make certain adjustments depending on the needs and characteristics of the targeted group of shoppers. The subject of this research is directed to understanding of the needs and local characteristics of shoppers in a specific field of trade. The aim of this paper is to show, through understanding and analysis of local market needs and characteristics, whether adaptations of shopper marketing strategy are necessary or not.

Therefore the following statement is used as the starting hypothesis for this research:

*The differences in shoppers' requirements at retail formats level impose the necessity of adaptable shopper marketing.*

Retailers and suppliers must recognize the shopping patterns of different shopper segments, which are sometimes selected at the level of behavior variables such as shopping opportunity (Kotler et al., 2007; George, 2012). The shopping missions of different targeted shopper groups, as well as the way in which these missions would be actualized (place, time, expectations, stimuli, etc.), should be defined. Understanding the nature of a specific natural need and making shopping decisions in the targeted shopper segment becomes the main preoccupation of the retailers and suppliers that apply shopper marketing.

In the following text, main literature review findings on shopping marketing will be explained. In addition, research methodology, research results and its discussion will be presented.

## Shopper marketing strategy – logic and focal points

The retail revolution has brought about changes in positions and relationships in marketing channels, emphasizing the importance of the point-of-sale marketing. Traditional approach to brand management makes no sense when capital and information are concentrated in retail, on the one hand, while there is an overflow of offers and proliferation of media, on the other. Above all, shoppers live ever faster and are less available to mass media, so the in-store contact with shoppers is crucial.

Recognizing different in-store shopping situations is the basis for development of advanced shopping experience, which is of use to both shoppers and also retailers and suppliers. Advanced shopping experience is certainly the objective of shopper marketing, regardless of whether regular or urgent purchases, that can more or less be planned, are concerned (Corrigan, 1997).

The shopping mission, which shoppers actualize in a specific retail format, should determine the shopper marketing content (Alexander, 2008). For example, product package (Vranica, 2008), POS communication (Burke et al., 2009) and shopping convenience (Brett et al., 2012) should all be suited for the situation in which shoppers find themselves.

Developing a shopper marketing program appropriate for a specific store is a challenging creative task, which requires investing time and other resources. This business ideal in its own right of customized solutions for a specific store and its shoppers should contribute to more effective shopper marketing, including loyalty and shopping as a routine (Turano, 2012).

The needs of the defined retail shoppers are in focus, which is also pointed to by the following widely accepted definition: "Shopper Marketing is the use of insights-driven marketing and merchandising initiatives to satisfy the needs of targeted shoppers, enhance the shopping experience, and improve business results and brand equity for retailers and manufacturers" (Shopper Marketing Best Practices, 2010). There are various possible approaches to gathering the data on shoppers, including the following: loyalty programs, scanned data, online polls, in-store interviews, ethnographic research, focus on shopper groups, and shopper panels (Pincott, 2012).

The aim is to treat shoppers systematically in different shopping process phases and in an individualized manner (Alexander, 2015). Modern technology enables communication with shoppers at any place, inside and outside the store, and also before, during, and after shopping. All the stated above, among other things, significantly impacts the increase in POS activities' importance. The increase in the number of stimuli that shoppers are exposed to in shopping process is getting more and more obvious every day. In addition, shoppers are influenced at key points during the entire shopping process, whereby their behavior inside and outside the store is monitored in a balanced manner (Wyner, 2011). Shankar and his associates suggest that shoppers must be influencedlong before they enter the store, whereby they point to the conclusion about the importance of the sequence of steps which are applied to influence the shoppers (Shankar et al., 2011). In addition, consistent communication with shoppers, both inside and outside the store, is crucial for an effective shopper marketing program (Pincott, 2012; Kessler, 2011). Regarding this, Fam and his associates conclude that shopper marketing should consist of an integrated marketing program in the full sense of the word (Fam et al., 2011).

The perception of offered value is decisive with respect to shopper behavior and retail effect (Verhoef, 2007). In this context, a retailer develops a shopper marketing program adjusted to the entire offer and the selected shoppers of the store (Nitzberg, 2012). Thus, for example, retailers should attend to the shoppers' pickiness with respect to assortment in the environment of a wide selection of opportunities, that is, in the environment of a fierce competition and rich market offer (Levav, Zhu, 2009).

The total in-store communication, including discount offers, should be balanced according to the targeted shoppers' profile. With respect to the focus on more affluent shoppers, for example, the in-store communication should be adjusted with the emphasis on quality and prestige, for which the shopper is willing to pay (Baker et al., 2002). Starting from the

above statements on shopper marketing, the research into shoppers' perception regarding the factors which are decisive when the shoppers make their choice of food retail store has been conducted and all this is done for the purpose of testing the accepted starting hypothesis. These factors, at the same time, represent the focus points for defining of shopper marketing strategy in retail. The research includes the following factors: price, sales personnel, parking, working hours, loyalty programs, and private labels share.

## Research methodology

In the research, we used the method of direct surveying of shoppers who shopped in mainly food retail stores at the territory of Belgrade. In this area a total of 1,778 retail stores were identified by 31 March 2014 included, with total selling space of over 250,000m² (Milošević, 2015), which means that average selling space of individual store was somewhat over 140 m². Individual retail stores are statistical elements, and the set of all individual retail stores in Belgrade's city core are population.

The research included 1,000 respondents. Surveying of shoppers was done on the field by method of personal interview, that is, the shoppers were surveyed immediately after their shopping and the questionnaire was designed in advance. One of the survey's objectives was to, based on the shoppers' attitudes and habits, identify potentially possible shopper marketing strategies in food retail, and specifically for individual retail formats at the territory of Belgrade's city core. Based on the existing experience with respect to analyzing a specific retail store from shoppers' perspective, it is necessary to survey 50 or more respondents–shoppers. This means that this research required a sample of 20 retail stores. Also, we have compared the ratings obtained by means of simple random sampling technique and by means of stratified random sampling technique on the samples of the same size selected from the population comprising all retail stores in Belgrade's city core.

The results of comparison, as expected, show that ratings' precision significantly increases when stratification is applied. Besides the increased precision of ratings, the sample scope is also significantly increased. We have managed to obtain a representative sample of the retail stores where respondents were surveyed.

The entire research was designed to follow the established scientific hypothesis. A five-point Likert scale was used in the questionnaire, so the respondents were able to rate, on a scale from one to five (one being the lowest, and five being the highest rating), the importance of individual factors which were decisive in their selection of a particular store to shop in. The shoppers were surveyed after they had completed their shopping in the retail stores selected for the stratified sample according to the previously described methodology. The sample consisted of four strata which included different retail formats. The results of the survey are presented in the continuation of this text.

## Results and discussion of the research results

When all the respondents' answers are observed, store's location is the most important factor when shoppers are selecting a retail store. The overview of the ratings of all factors is presented in the following Table.

**Table 1**. Ratings of the shopping factors at the level of all the surveyed respondents

| Rating position | Factor | Average rating (1-5) |
|---|---|---|
| 2 | Favorable prices | 4.327 |
| 1 | Location (distance) from retail store | 4.528 |
| 3 | Product assortment | 4.318 |
| 6 | Pleasant ambience | 4.089 |
| 4 | Sales personnel | 4.163 |
| 7 | Parking space | 3.202 |
| 5 | Store's working hours | 4.162 |
| 9 | Loyalty program (cards) | 2.757 |
| 8 | Private labels | 3.167 |

*Source: The authors' calculations*.

The summarized overview, however, gives only an average image. In order to make decisions related to shopper marketing strategy, it is necessary to observe the focus points through different shopper profiles. Shopper profiles may be defined in various ways. For the purpose of this research, we analyzed shoppers' profiles established according to the following criteria: format of retail store where shoppers shop, sex, and shoppers' income.

*Shoppers' preferences according to retail store format*

The analysis of shoppers' profiles, defined based on the place where they shop, is founded on categorizing the shoppers according to the format of the retail store where they did their shopping. The formats are defined according to Trade Formats Rules (Official Gazette of the Republic of Serbia, 2011), according to which a store of up to 200 m²selling space is categorized as mini-market, from 200 to 400 m²as convenience market store, from 400 to 2,000 m²as supermarket, and over 2,000 m²as hypermarket. Besides the selling space size, other characteristics were also taken into consideration. Bearing in mind the previously described methodology and sampling method, each of the four observed formats has 250 responses.

**Table 2.** The responses of the shoppers who shopped in the stores with selling space of less than 200 m²

| Rating position | Factor | Average rating (1-5) |
|---|---|---|
| 5 | Favorable prices | 4.184 |
| 1 | Location (distance) from retail store | 4.872 |

| Rating position | Factor | Average rating (1-5) |
|---|---|---|
| 4 | Product assortment | 4.320 |
| 3 | Pleasant ambience | 4.360 |
| 2 | Sales personnel | 4.480 |
| 7 | Parking space | 2.776 |
| 5 | Store's working hours | 4.184 |
| 9 | Loyalty program (cards) | 2.280 |
| 8 | Private labels | 2.576 |

*Source: The authors' calculations.*

From the previous table it is obvious that store's location is the most important factor from shoppers' perspective when choosing a retail store with less than 200 m²of selling space, that is, the most important thing for shoppers who buy in such stores is how close the store is to their homes. Sales personnel is second in importance, pleasant ambience is third, and so on.

**Table 3.** The responses of the shoppers who shopped in the stores with selling space from 200 to 400 m²

| Rating position | Factor | Average rating (1-5) |
|---|---|---|
| 4 | Favorable prices | 4.024 |
| 1 | Location (distance) from retail store | 4.532 |
| 2 | Product assortment | 4.216 |
| 6 | Pleasant ambience | 3.732 |
| 5 | Sales personnel | 4.000 |
| 9 | Parking space | 2.588 |
| 3 | Store's working hours | 4.128 |
| 7 | Loyalty program (cards) | 2.948 |
| 8 | Private labels | 2.780 |

*Source: The authors' calculations.*

From the previous table it is obvious that store's location is the most important factor from shoppers' perspective when choosing a retail store with selling floor space from 200 to 400 m², that is, the most important thing for shoppers who buy in such stores is how close the store is to their homes. Product assortment is second in importance, working hours are third, and so on.

**Table 4.** The responses of the shoppers who shopped in the stores with selling floor space from 400 to 2,000 m²

| Rating position | Factor | Average rating (1-5) |
|---|---|---|
| 1 | Favorable prices | 4.552 |
| 2 | Location (distance) from retail store | 4.452 |
| 3 | Product assortment | 4.332 |
| 4 | Pleasant ambience | 4.276 |
| 5 | Sales personnel | 4.268 |
| 8 | Parking space | 3.356 |
| 6 | Store's working hours | 4.148 |
| 9 | Loyalty program (cards) | 2.836 |
| 7 | Private labels | 3.876 |

*Source: The authors' calculations.*

From the previous table it is obvious that prices are the most important factor from shoppers' perspective when choosing a retail store with selling space from 400 to 2,000 m², that is, favorable prices are the most important thing for shoppers who buy in such stores. Location of the store, that is, how far the store is from shoppers' homes is second in importance, product assortment is third, and so on.

**Table 5.** The responses of the shoppers who shopped in the stores with selling space larger than 2,000 m²

| Rating position | Factor | Average rating (1-5) |
|---|---|---|
| 1 | Favorable prices | 4.548 |
| 3 | Location (distance) from retail store | 4.256 |
| 2 | Product assortment | 4.404 |
| 6 | Pleasant ambience | 3.988 |
| 7 | Sales personnel | 3.904 |
| 5 | Parking space | 4.088 |
| 4 | Store's working hours | 4.188 |
| 9 | Loyalty program (cards) | 2.964 |
| 8 | Private labels | 3.436 |

*Source: The authors' calculations.*

From the previous table it is obvious that prices are the most important factor from shoppers' perspective when choosing a retail store with selling floor space larger than 2,000 m², that is, favorable prices are the most important thing for shoppers who buy in such stores. Product assortment is second in importance, location is third, and so on.

Based on the previous analysis, it is noticeable that the importance of individual factors from shoppers' perspective differs depending on formats of the observed retail stores. Therefore,

it may be concluded that different shopper marketing strategies need to be formulated for different retail formats.

*Shoppers' preferences according to sex*

Of the total number of respondents, 43% were males, and 57% were females.

**Table 6.** The responses of male shoppers

| Rating position | Factor | Average rating (1-5) |
|---|---|---|
| 2 | Favorable prices | 4.362 |
| 1 | Location (distance) from retail store | 4.498 |
| 3 | Product assortment | 4.293 |
| 6 | Pleasant ambience | 4.047 |
| 4 | Sales personnel | 4.174 |
| 7 | Parking space | 3.364 |
| 5 | Store's working hours | 4.171 |
| 9 | Loyalty program (cards) | 2.458 |
| 8 | Private labels | 3.089 |

*Source: The authors' calculations.*

**Table 7.** The responses of female shoppers

| Rating position | Factor | Average rating (1-5) |
|---|---|---|
| 3 | Favorable prices | 4.301 |
| 1 | Location (distance) from retail store | 4.551 |
| 2 | Product assortment | 4.336 |
| 6 | Pleasant ambience | 4.120 |
| 4 | Sales personnel | 4.155 |
| 8 | Parking space | 3.082 |
| 4 | Store's working hours | 4.155 |
| 9 | Loyalty program (cards) | 2.979 |
| 7 | Private labels | 3.225 |

*Source: The authors' calculations.*

With regard to profiling of shoppers according to their sex, both male and female shoppers state that location is first in importance. However, further ratings show that favorable prices are second in importance for male, while product assortment comes second in importance for female shoppers. Product assortment comes second in importance for male, while favorable prices are second in importance for female shoppers. Sales personnel and store's working hours are fourth and fifth in importance respectively for women, while these two factors are both fourth in importance for men. Both sexes rate pleasant ambience as sixth in importance. Parking space comes seventh for men, while private labels are seventh in importance for women. Private labels are eight in importance for men, while for women parking space holds that position. Both sexes rated loyalty programs as ninth in importance.

Based on the results presented, it is noticeable that the attitudes of shoppers profiled according to sex and retail store formats are very different. In the function of testing the research's starting hypothesis, we have also considered the shoppers' preferences according to their income.

*Shoppers' preferences according to their income*

Of the total number of respondents, 42% had above average household income and 43% had below average household income, while 15% of respondents answered that they did not know or refused to answer the household income related question.

**Table 8.** The responses of shoppers with above average household income

| Rating position | Factor | Average rating (1-5) |
|:---:|:---|:---:|
| 2 | Favorable prices | 4.330 |
| 1 | Location (distance) from retail store | 4.490 |
| 3 | Product assortment | 4.316 |
| 5 | Pleasant ambience | 4.081 |
| 5 | Sales personnel | 4.081 |
| 7 | Parking space | 3.543 |
| 4 | Store's working hours | 4.199 |
| 9 | Loyalty program (cards) | 2.775 |
| 8 | Private labels | 3.383 |

*Source: The authors' calculations.*

**Table 9.** The responses of shoppers with below average household income

| Rating position | Factor | Average rating (1-5) |
|:---:|:---|:---:|
| 2 | Favorable prices | 4.324 |
| 1 | Location (distance) from retail store | 4.526 |
| 3 | Product assortment | 4.343 |
| 5 | Pleasant ambience | 4.154 |
| 5 | Sales personnel | 4.207 |
| 7 | Parking space | 2.959 |
| 4 | Store's working hours | 4.136 |
| 9 | Loyalty program (cards) | 2.814 |
| 8 | Private labels | 3.145 |

*Source: The authors' calculations*

With respect to profiling shoppers according to their households' income, we may conclude that retail store location is crucial for both observed groups. However, differences are more than obvious with respect to rating of other factors.

Lower income shoppers rate product assortment as second in importance, while higher income shoppers rate favorable price as second in importance. Based on this, we may conclude that higher income shoppers dedicate more attention to product prices than lower

income shoppers do. The explanation for this illogical situation could be that the respondents provided socially desirable answers in the survey, that is, that the lower income respondents did not want to admit that the price was most important to them. Also, lower income shoppers are less mobile (they do not own cars, retired people shop only in local store, and so on), so they shop in only one store regardless of the prices.

Higher income shoppers rate product assortment, while lower income shoppers rate favorable price as third in importance. Working hours are rated as fourth in importance by higher income shoppers, while lower income shoppers rate sales personnel fourth in importance. Both shopper categories rate pleasant ambience as fifth in importance, but higher income shoppers also rate sales personnel the same, while lower income shoppers rate working hours as sixth in importance. Higher income shoppers rate parking space, while lower income shoppers rate private labels as seventh in importance. Higher income shoppers rate private labels, while lower income shoppers rate parking space as eight in importance. Both categories of shoppers rate loyalty program as the least important. In order to obtain a more detailed insight into the shoppers' preferences according to sex, it is necessary to analyze the profiling of shoppers according to their income with respect to different retail formats. The summary of this analysis is shown in the following Figure.

**Figure 1.** The results of responses structures according to shoppers' income and retail formats
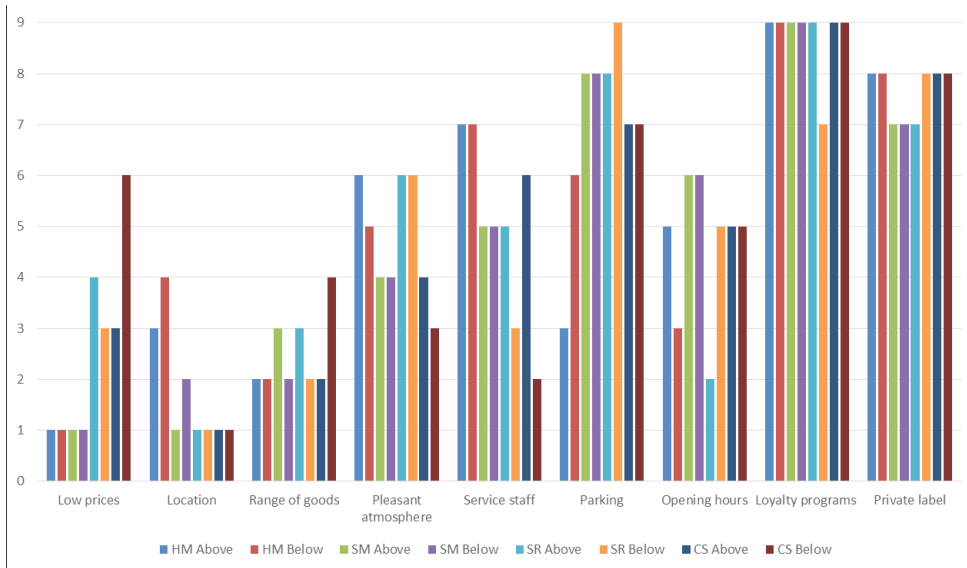


HM (hypermarket)-formats over 2000 m²; SM (supermarket)-formats 400-2000 m²; SR (convenience market store)-formats 200-400 m²; CS (mini-market)-formats smaller than 200 m²

*Source: The authors' calculation.*

When the factor of favorable prices is concerned for retail formats larger than 2,000 m² and for formats of 400–2,000 m², both shopper categories rate it as first in importance. For retail formats of 200–400 m², higher income shoppers rate it as fourth, while lower income shoppers rate it as fifth in importance. However, in store formats smaller than 200 m², higher

income shoppers rate the factor of favorable price as third, while lower income shoppers rate is as sixth in importance.

Location factor is rated lowest by shoppers in retail formats larger than 2,000 m$^2$– higher income shoppers rate it as third, while lower income shoppers rate it as fourth in importance. Higher income shoppers rate this factor as first in importance in retail formats of 400–2,000 m$^2$, while lower income shoppers in this format rate it second. Location is the most important factor, rated as first in importance, by shoppers in formats of 400–2,000 m$^2$and also by the ones in retail formats smaller than 200 m$^2$, regardless of their incomes.

Product assortment as a factor in selecting a retail store for shopping is rated as second in importance by both shopper categories in retail formats larger than 2,000 m$^2$. In retail formats of 400–2,000 m$^2$higher income shoppers rate this factor as third, while lower income shoppers rate it as second in importance. The situation is reversed in formats of 200–400 m$^2$– higher income shoppers rate product assortment as third, while lower income shoppers rate it as second in importance. In store formats smaller than 200 m$^2$higher income shoppers rate this factor second, while lower income shoppers rate it fourth in importance.

Based on the results presented, it is noticeable that the attitudes of shoppers profiled according to income and retail store formats are very different. The analyzed results show that the shoppers' perception regarding selection of a retail store for shopping is significantly determined by the retail format type of the store. In addition, it is noticeable that there are also significant differences in format level with respect to shoppers' sex and also with respect to shoppers' household income. Thus, for example, in retail store formats smaller than 200 m$^2$ men have shown different attitudes about certain number of factors than women have. In addition, shoppers with higher than average household income show different attitudes with respect to certain factors than shoppers with lower than average household income. The same applies with respect to the remaining three formats. Each format shows certain differences in ratings of individual factors.

The research results confirm the starting hypothesis, that is, they point to the conclusion that shopper marketing programs should be adjusted to specific shoppers' requirements at retail store level. For the purpose of achieving better sales figures on food products they have in their assortment, suppliers and retailers must take specific characteristics of Belgrade market shoppers into account.

In smaller stores with selling floor space of up to 200 m$^2$, it is only logical that location should be the primary factor for selection of the store for shopping, but the fact that sales personnel and pleasant ambience are rated very high – higher than prices or assortment – is also a very important piece of information. This insight offers elements for development of shopper marketing strategy by the retailers who focus on smaller format retails stores. The fact that private labels and loyalty programs are rated relatively low in importance by the respondents is also an important implication. However, it should be pointed out that both of these factors are still insufficiently developed in Belgrade market, and they are also rapidly gaining in importance, so they should not be neglected.

## Conclusion and directions for further research

The conclusion of the research is that the importance of individual factors from shoppers' perspective differs depending on the observed retail store formats. Shoppers have different shopping missions in different retail formats. Our research points out that the most important factor for shoppers in smaller stores are location and sales personnel. They require comfortable shopping. On the other hand, shoppers are more rational when they shop in large formats. Therefore, shopper marketing activities are focused on price attractiveness and wide assortment.

We may conclude that different shopper marketing strategies should be formulated for different retail store formats, whereby the research's starting hypothesis is confirmed. This research findings are completely consistent with focus on point of sale marketing investments efficiency which characterize shopper marketing.

With respect profiling of shoppers according to sex, both men and women rate store location as first in importance. However, in further ratings, favorable prices are most important for men, while product assortment is most important for women. Based on the presented results, it is noticeable that the attitudes of shoppers profiled according to sex vary significantly. Therefore, the option implementing different shopper market strategies based on the targeted shopper groups profiled according to sex should be considered in more detail in future researches.

When shoppers' profiles according to their household income are observed, we may conclude that location of the retail store plays a key role in both higher and lower income shoppers. However, some differences have been observed in ratings of other factors. This is the reason enough to conduct further researches into shoppers segmented in this way, for the purpose of developing a model for shopper marketing strategy adaptation.

Besides the analysis of the received responses summarized with respect to sex and household income, the paper also presents the analysis of the stated shopper segments for each retail store format type. The research results show that shopper groups segmented according to sex, on the one hand, and according to household income on the other, display different preferences with respect to the importance of individual factors which impact the selection of store, and that these preferences also differ with respect to each retail store format type.

We conclude that retailers and suppliers must recognize the shopping patterns of different shopper segments at store level. Store characteristics, such as product assortment and display, indeed impact the shoppers' perception on the values offered in a particular store. Generally speaking, the ambiance in the store plays an important role when shoppers make decisions about the store to shop in.

Based on the conducted research, we may conclude that shoppers' perceptions in food retail market require a profiled approach to retail store strategy adjustments, which includes shopper marketing programs and activities. This is, undoubtedly, a strenuous task which requires adequate knowledge and resources, whereby the effect of strategic differentiation and positioning of retail offer at the level of locally recognized and respected demand is achieved.

Shopper marketing strategy in predominantly food retail stores is relatively new and still insufficiently explored field, especially in Serbia. It would be very interesting to research into the potential of shopper marketing strategy in rural areas. Research into shopper marketing strategy according to different food products categories is also a very challenging field. In addition, it would be interesting to explore some specific types of food retail categories, such as, organic food products or products that claim to bring nutritional or health benefits. A comparative analysis of shopper marketing strategies in several countries, for example, the Balkan Region countries or the countries of former Yugoslavia, could also be important for both theorists and practitioners. This is even more true due to the fact that shopper marketing concept is relatively young and insufficiently developed, especially at the level of local practices and capabilities.

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# STRATEGIJA KUPOVNOG MARKETINGA U PREHRAMBENOJ MALOPRODAJI

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## Rezime

*Vodeća uloga maloprodaje u prehrambenim kanalima marketinga daje značajan doprinos afirmaciji kupovnog marketinga– nove marketinške paradigme u čijem je fokusu kupac i mesto prodaje. Rezultati temeljne analize naučne literature koja se bavi kupovnim marketingom su prezentovani u radu. Metodologija istraživanja uključuje anketiranje 1000 kupaca prehrambenih maloprodajnih objekata na području Beograda. U radu se sagledavaju i analiziraju karakteristike kupaca urbanog tržišta prehrambene maloprodaje i u skladu sa nalazima realizovanog istraživanja izvodi zaključak o neohodnoj adaptaciji strategije kupovnog marketinga. Značajan rezultat istraživanja je da percepcije kupaca na prehrambenom maloprodajnom tržištu zahtevaju profilisani pristup prilagođavanju strategije maloprodajnog objekta koji uključuje programe i aktivnosti kupovnog marketinga. Rad otvara brojna pitanja mogućih pristupa kupovnog marketinga ukrštajući varijable maloprodajnih formata, pola i visine primanja kupaca.*

***Ključne reči****: kupovni marketing, prehrambena maloprodaja, preferencije kupaca, maloprodajni formati.*

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# ECONOMIC ACTIVITY IN AGRICULTURE IN THE PERSPECTIVE OF *EMBEDDEDNESS* THEORY: THE CASE OF POLAND

*Michał Dudek[1]*

## Summary

*The paper presents the concept of embeddedness of economic activity in relation to agriculture. In this perspective, economic activity can be considered dependent on cognitive structures, structures of social relations, culture, and political institutions. It has been concluded that the idea of embeddedness can be an interesting and useful analytical tool for the analysis of economic activity undertaken by farmers. The article presents an analysis of the state of the art, as well uses selected information and data on the methodology of panel surveys carried out by the Institute of Agricultural and Food Economics – National Research Institute. Based on the analysis of the embeddedness theory, it is argued that embeddedness is not a coherent theoretical concept but rather a potential framework for investigating various economic issues. One of these issues is agricultural activity. Embeddedness framework constitutes a scheme which could organize an alternative approach to economic actions to mainstream agriculture economics.*

***Key words:*** *embeddedness, economic activity, agriculture, farmer.*

**JEL:** *Q15, B5, Z13.*

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# Introduction

The term *embeddedness*[2] became a keyword in social sciences, which was used to describe and analyse an individual's activity in the field of economy. This word refers to the model or a theoretic concept on the boundary between sociology and economics. The concept of *embeddedness*[3] of economic activity should above all be placed in opposition to the mainstream economics that presents the vision of *homo oeconomicus*, i.e. an individual[4] who is rational, has full information at their disposal on the market, who can prioritise their preferences, and makes optimal choices to maximise own utility regardless of their surroundings. In the paper agriculture activity is presented from the *embeddedness* perspective as a type of economic action.

Introduction of the term *embeddedness* to social sciences is commonly attributed to Karl Polanyi, who studied the subject of causes and effects of the development of modern market societies. According to this author, economic development in the age of the industrial revolution was accompanied by the process of removing market exchange from the influence of institutions (principles of mutuality of redistribution and self-sufficiency), which organised economic life of pre-capitalist societies. As a consequence of the subjection of life to the market model, the man and nature started to be treated as commodities, and interpersonal ties started to fall apart (Polanyi, 2010). It cannot be unambiguously determined whether the term embeddedness was used by the said author as a metaphor or a name of a theoretical concept. Indubitably, the latter kind of function started to be attributed to the said term by other researchers, who directly or indirectly referred to the Hungarian anthropologist's work, much later on.

The concept of the *embeddedness* of economic action is one of the key theoretical foundation of contemporary economic sociology. According to this idea the economic activity is determined by cognition, social structures, culture and politics. Selected theories are described, as well as empirical studies concerning setting up, running and maintaining an agricultural holding. In the first part of the paper the agricultural activity through the prism of classical microeconomic approach was described. Next the key foundation of *embeddedness* of economic action was presented. In the second part of the article we used basic assumptions of this concept to interpret and analyse an agriculture activity. For instance, basing on the Institute of Agricultural and Food Economics – National Research

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2   Due to the cognitive and emotional connotations of the embeddedness, it is stressed that a more appropriate is writing this word in quotation marks or translating as rootedness or settlement (Chmielewski, 2010). Translating embeddedness as rootedness evokes associations with deterministic theories that define the man as a passive being that is totally dependent on the surroundings. It the perspective of the embeddedness paradigm, such an interpretation does not seem absolutely true. It is the other way round, emphasis on the importance of an individual's activity in the surroundings may be seen in the idea in question. Subject to this reservation, the word written in italic because this approach has become relatively more popular in the literature.

3   In this paper, the terms: concept, idea, perspective and paradigm are used interchangeably.

4   The terms individual and actor are used interchangeably.

Institute (IAFE-NRI) surveys methodology we proposed an analytical model of farmer's position and actions within socio-economic structures.

## Literature review

In the classic microeconomic approach, the agricultural producer (farmer), who is the manager of farm, strives for the maximisation of his/her goal function, i.e. achieving income at a satisfactory level. The implementation of this task depends on a number of decisions in the following areas: production type and volume, allocation of resources and inputs (financial means, work time, skills), uncertainty and risk (environmental and seasonal character of agricultural production) (Kowalski, Rembisz, 2003). It is often emphasised that in order to realise his/her production plans to the largest possible extent, a farmer can influence only one of the abovementioned areas, namely the allocation of resources and inputs, more precisely, in the area of work efficiency. Among the foundations of work efficiency there is the concentration of capital and the proper technical equipment of an agricultural farm. However, while analysing the situation of a farmer managing an agricultural holding, apart from the type and size of production, the division of inputs and resources, uncertainty and risk, the significant impact of a number of exogenous conditions must be included, i.e. social context, regulations and the institutional factor, infrastructure and the actions of other market participants, on the effects of production. In this respect the situation in the environment of an agricultural farm becomes more and more complex, not only because of the processes of growing competition and changing business cycles on agricultural markets, but also due to the necessity to adjust to the changing consumer needs, as well as agricultural policy, systematically increasing the requirements for producers (those requirements mainly concern manufacturing agricultural products and their quality). As a result, each activity in the field of economy, for example running a farm, is not fully independent. It is influenced by four limiting elements: the human cognitive structure, the structure of social relations, culture, and political institutions (DiMaggio, Zukin, 1990). Therefore, four types of *embeddedness* could be distinguished: cognitive, structural, cultural, and political.

Cognitive *embeddedness* refers to the way the human mental processes are structured. When the situation is uncertain and complex, and cost of obtaining information is high, which occurs on the market, an individual's rational activity is limited. The existence of such barriers has been proved by research in the field of decision theory and cognitive psychology. An example of limits to human mental processes are decision heuristics: representativeness, availability, and anchoring, which are used when an individual is in doubt. The representativeness heuristic regards the determination of the chance that a defined event (event A) occurs based on the degree of similarity between event A and event B (most often, it is a typical case, which is known). The availability heuristic consists in estimating the probability of a specific event based on facts that may be easily evoked from memory. Finally, the anchoring heuristic concerns the distorting impact of the arbitrarily accepted values (starting points) on further estimates (Tversky, Kahneman, 1974). They result in saving time, and they are usually effective, but,

as proved by experiments, they cause systematic and predictable errors (Tversky, Kahneman, 1974).

Cultural *embeddedness* regards collective convictions that influence individual strategies and objectives of economic nature. Regardless of the ambiguity of culture as a concept, it should be accepted that the term can be applied to its regulative, motivational or informative aspect, i.e. generally accepted norms, values, behavioural patterns, and not the constitutive aspect in the sense of cognitive *embeddedness* (Dequech, 2003). Emphasis on the economic aspect of the latter may be particularly useful in the analysis of mutual influence between economy and culture. Economic culture encompasses value systems, behavioural patterns and cognitive schemas that are related to the economic activity. Value systems define what is desirable or unacceptable in a specific community. Behavioural patterns refer to internalised norms and habits that influence human behaviour. Finally, the cognitive models constitute a category, which is used by people to interpret reality, particularly in its economic aspect (Marody, Kochanowicz, 2007).

Structural *embeddedness* regards perception of economic activity through patterned and lasting interpersonal relations (Granovetter, 1985). In this view, actors do not make decisions in their purposeful activities independently of their environment, but are neither subjected to it. Due to social interactions, which then result in business contact, it is possible to, e.g., acquire relatively more relevant and cheaper information that are necessary from the perspective of one's activity, establish mutual trust between parties to a transaction, which limits possible opportunism or abuse, or a relatively higher level of legitimisation of the surroundings. The type of *embeddedness* in question refers to a structural paradigm where the principal axis of reflection is the network, i.e. patterns of ties between entities that influence the ways various resources are allocated between them (Wellman, 1988).

The last kind of *embeddedness* is political *embeddedness*, which concerns the asymmetry of power, influence, or strength between entities (DiMaggio, Zukin, 1990). Inequalities of this kind define the manner resources are allocated, and they may result from various causes. First, they are related to the legal and institutional system in which the individual functions. A specific legal and institutional system may favour selected entities at the expense of other. Second, one actor's advantage over another is often related to unequal distribution of resources such as money, technology, or information. Third, asymmetry of power is related to the level of social legitimisation (Beckert, 1999).

Based on the analysis of the embeddedness theory, it should be argued that *embeddedness* is not a coherent theoretical concept but rather a potential framework for investigating various economic issues. It constitutes a scheme which could organize approach to economic activity in a way alternative to economics.

## Data and methodology

The aim of the study is to present a specificity of economic activity from the perspective of the concept of *embeddedness*. The type of action that has been selected for analysis is agricultural activity undertaken by the farmer (manager of agricultural holding), with particular attention to the Polish context. The basis for the presented analysis is the assumption that any activity in the field of economy is conditioned by cognitive structures, social relations, culture and political institutions, which has been derived from the idea of *embeddedness*.

The main source of the presented reflection has been the analysis of literature regarding economics and sociology. For the definition of socio-economic environment of farm managers in Poland the methodology of panel surveys conducted by the IAFE-NRI has been used in this study. This surveys are multi-annual studies and are conducted periodically in the same villages, in all local farms owned by natural persons, with an area of more than 1 ha of agricultural land. The villages were specially selected to make the size of the analysed farms representative to the actual Polish agrarian structure, both at the national and macroregional level. In IAFE-NRI surveys one of the research tool is a questionnaire for farming families (*Family and the Farm*). This questionnaire is designed to collect a great variety of detailed information, not only on the features of agricultural holding, but also on the socio-demographic characteristics, the educational level, economic activities of managers and members of their families (Sikorska, 2013). The gathered information concerned also the selected characteristics of production units, particularly on its area, equipment with fixed production assets, the scale of production, market and investment activity, as well as sources of financing activities.

The indicated type of information has been used to prepare the model of social *embeddedness* of a farmer's economic activity (a model-oriented approach) The schema has the form of an ego network and covers potential social relations with the social and institutional environment that can be relevant to agricultural production at the microeconomic level. The ego network concerns social relations established with actors from the perspective of an individual (focal node). Information on the ego network is useful for the comprehension of the way the surroundings influence individuals and provide a fragmentary image of the entire structure of social relationships (Hanneman, Riddle, 2005).

## Results

In the perspective of the concept of cognitive *embeddedness*, agricultural activity, as well as any other activity in the field of economy, should be deemed to be affected by errors. Such errors may result from a number of factors. First, agricultural producers are threatened with increasingly numerous market risks, which cause a significant level of uncertainty. Apart from the biological and natural factors that are relevant to agricultural production (production risk), the doubt is increased by specific macroeconomic conditions that influence demand for agricultural raw materials and the

cost of capital (price risk), collective, often irrational, behaviour of other participants in the market, and changes in the agricultural policy (Hamulczuk, 2009). In the perspective of findings related to climate change, it should be deemed that the risk related to agricultural activity due to biological and natural factors such as temperature or extreme weather phenomena is not constant, but is increasing as the pollution of the natural environment increases (Stern, 2009). In many cases, farmers have insufficient information on current and future market conditions for production (supply, demand, price), existing and proposed legal regulations, the existing instruments of agricultural policy, and changes to them. Such knowledge would make it possible to take proper decisions both in the shorter and in the longer perspective. However, collecting and processing large quantity of data is too expensive, and the situation in the surroundings of people managing farms, as well as other organisations, becomes more and more complex. In general, it is impossible to adjust to market conditions in a short term because it would require changes to the production process through additional investments, whose implementation exceeds a single production period. An additional barrier for earning the assumed income from the farm are limits to the cognitive process, such as the decision heuristics that have been described above.
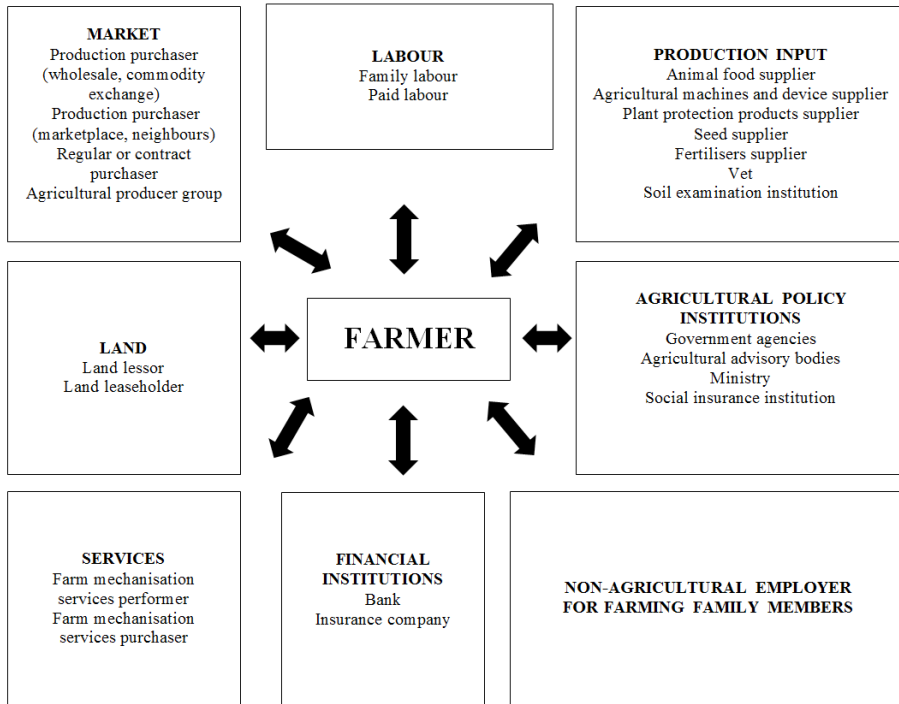
Considering the importance of culture for the production of goods and services is aimless from the perspective of classical and neoclassical economics. A farmer who has complete market information takes rational decisions with regard to what, when, how and how much to produce and at what price to sell the produced raw materials to ensure the achievement of one's own objective in the form of satisfactory income from the farm. From the perspective of the concept of *embeddedness*, we deal with a view on the situation that is different from the one described above. A specific kind of national, regional or local culture shapes a dominant orientation towards the field of economy. The set of values and norms of behaviour at a specific level translates into one's image of economy, interpretation of phenomena in this field, as well as the form and scale of activity that is referred to as entrepreneurial activity (Glinka, 2008).

As far as Poland is concerned, it should be assumed that there is no uniform economic culture. Its diversity may be related to the spatial, social or economic aspect. What is more, it may be diverse within specific categories of people. In this context, various orientations towards economic activity can be recognised among farmers. For example, the tendency is illustrated by the frequently observed division into industrial (commercial) farms and farms with social functions (semi-subsistance farms) (Halamska, 2009). The farmers of the former category implement the model of entrepreneurial activity. In this case, the purpose of farming is profit and effective use of resources, not necessarily used on the basis of ownership. The group in question is often characterised by narrow specialisation of production and striving for its continuous development. As far as the nature of family is concerned, this orientation is the field of competition between generation and high level of independence among the young, which can sometimes contribute to lack of successors. A different attitude towards agricultural activity accompanies the latter model – the family farmer model (not market oriented farms),

This model refers to farmers who treat the agricultural holding as a place of residence, traditional workplace, a means of providing food, social security or supplementing income. The main goal is not profit, but continuation of the farm's existence. Usually, such farms produce a diversity of agricultural products on a small scale (often not for the market but family use). Cooperation between generations is the dominant model in the group in question. Parents support their children's occupational orientations (non-agricultural mostly), they retire relatively earlier and transfer production assets within the family (Gorlach, 2004). It seems that the latter model is relatively common in Poland.

In the perspective of structural *embeddedness*, a farmer's economic activity may be discussed as a system of relations that link them with diverse entities. According to this paradigm, it can be assumed that the specific position and activity of a user of a farm in the network, as well as the features of that network, translate into specific effects of the activity (Witt, 2004). The presence of this relation depend on, e.g., type of ties that have been developed *embedded* or *arm's length* ties and their distribution. The research shows that a balanced structure of *embedded* ties based on extended social contact and *arm's length* ties (short-term market transactions) positively impacts the achievement of the intended economic results (Uzzi, 1997). Apart from material resources, important features include the possibility to acquire and develop such elements as reputation, contact with business partners, suppliers, and advisers. It should be supposed that if a farmer's position in the network and their structure of relations is more extensive and diverse, support they receive from it is greater. In the model structure of the studied farmers' ego network, which was recreated based on the methodology of the research by the IAFE-NRI a significant number of actors of economic significance for the agricultural activity has been identified (fig. 1). Links or nodes represent various types of flow: goods, money, services, or information.

Figure 1. Structural *embeddedness* of the farmer's economic activity[5]



| MARKET | LABOUR | PRODUCTION INPUT |
|---|---|---|
| Production purchaser (wholesale, commodity exchange) Production purchaser (marketplace, neighbours) Regular or contract purchaser Agricultural producer group | Family labour Paid labour | Animal food supplier Agricultural machines and device supplier Plant protection products supplier Seed supplier Fertilisers supplier Vet Soil examination institution |
| LAND Land lessor Land leaseholder | FARMER | AGRICULTURAL POLICY INSTITUTIONS Government agencies Agricultural advisory bodies Ministry Social insurance institution |
| SERVICES Farm mechanisation services performer Farm mechanisation services purchaser | FINANCIAL INSTITUTIONS Bank Insurance company | NON-AGRICULTURAL EMPLOYER FOR FARMING FAMILY MEMBERS |

*Source:* own elaboration based on the research of IAFE-NRI.

Political *embeddedness* in relation to agricultural activity can be examined from a variety of perspectives. Agriculture as a sector of intense public support can be treated as a field of decision taken as a result of public choice under the political system and by political institutions (Wilkin, 2008). For example, one of the aspects of the problem is related to the issue of legitimisation of agricultural policy in most highly developed countries. Subsidies for producers of agricultural raw materials leads to opposition by other social groups such as taxpayers or food consumers in those countries. What is more, it is stressed that subsidising agriculture in rich countries is a barrier for economic growth in poor countries that could base their export on those goods (Kowalski, 2010). Another symptom of political influence on agricultural activity can be the shape of agricultural and rural development policy at the national and the EU level. Research shows that CAP reforms (and, as a consequence, the structure of tools of that policy) are strongly influenced by political pressure. Thus, there is a tendency to avoid responsibility for one's decisions and to transfer them to other institutions among policy-makers (Daugbjerg, Swinbank, 2007). Furthermore, the aspect of CAP in question can be reflected by unequal distribution of resources or development opportunities among the beneficiaries. It is estimated that the majority of funds under

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5    The diagram of the farmer's immediate surroundings includes selected items.

the system is received by a small portion of producers (Kowalski 2010). This fact can be interpreted as the activity of various interest groups and the so-called distributional coalitions, which are interested in the introduction of legislative solutions that are most beneficial in their perspective or the implementation of a specific public fund allocation mechanisms (Wilkin, 2008).

## Conclusion

The perspective of *embeddedness* is an interesting theoretical model whose purpose is analysis of activity undertaken in the field of economy. It is opposed to the concept of a rational actor, which is the basis of the mainstream economics. *Embedded* economic activity is seen as dependent on cognitive structures, social relations, culture, and politics. Activity that consists in running a farm is characterised by a number of shared regularities compared to other market activities. Just like in the case of other types of actors, the barrier for a farmer's rational behaviour are decision heuristics. On the other hand, the specific nature of agricultural production may be its strong dependence on biological and natural factors, which influence the complexity of the situation and increase uncertainty. From the perspective of the concept of *embeddedness*, the outcomes of production may be conditioned by the structure of the farmer's social relations. An actor's position in the network, the features of the network, types of ties or kinds of activity translate into the availability of resources and opportunities related to a business enterprise. Based on research by the IAFE-NRI, a model of studied farmer's social and institutional relations that are relevant to farming has been should be considered as complex. The model includes a significant number of entities in the nearest surroundings of the agricultural holding's managers. In the analysed perspective, culture should be deemed as an important factor that affects goals and strategies in running agricultural activity. It is reflected by various attitudes towards one's own production assets among farmers. Moreover, agriculture is a sector which is shaped by political institutions. Thus, activity within it is related to functioning under a conflict with regard to specific ways conditions for production are arranged or resources are allocated.

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# DUTY TO PROVIDE PRECONTRACTUAL INFORMATION OF CROP INSURANCE

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## Summary

*Crop insurance is one of the most important types of agricultural insurance. From the aspect of insurance technique, this insurance is very challenging and requires careful drafting of insurance terms and tariffs. This type of insurance can provide security to farmers in case of financial losses caused by numerous risks which they are exposed to. Insufficient knowledge of the opportunities that the insurance provides is caused in part by inaccurate and vague explanations that have been offered by insurers in negotiation stage to interested farmers. In this regard, an important novelty in Serbian law is the obligation of contractual information which was introduced by the new Insurance Law (IL). In this way, additional protection to users of the service of insurance in relation to the provisions of the obligation law is provided. The goal of this obligation is to allow a negotiator to gain a clear idea of the essential elements of the insurance contract, to consider the proposed coverage and make a reasonable decision whether to accept the conclusion of the insurance contract or not, i.e. under what conditions it should be concluded. Sanctions for failure in the obligation to inform act preventively and repressively on insurers.*

*The aim of this study is analyse the legal and factual position of the service beneficiaries in terms of obligation of economically and experientially superior contractor of lawful and full information of a policyholder prior to the conclusion of an insurance contract in a very specific branch of insurance, such as crop insurance. The application of inductive-deductive and comparative-legal research method, points to certain doctrinal and normative solutions from other legal systems, legal provisions applicable in the law of the Republic of Serbia are critically set out, as well as the daily practice of insurance companies.*

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## Introduction

Agriculture can be a source of growth of the national economy, as an area suitable for investment as it is a source of income for half of humanity (Mahul, Stutley, 2010). Agriculture is, on the other hand, the industry exposed to numerous risks. The negative aspects of the market, climate changes, as well as more frequent extreme events, such as sudden changes in temperature, droughts and floods, lead to tragic consequences, destruction of crops and livestock. In developed countries, citizens and businesses have the economic strength that allows them to transfer their risks to insurers. In these countries, the damages resulting from the catastrophes are predominantly covered by insurance. In this way, the negative impact of these events on the state budget is reduced.[4] On the other hand, there is a great difference between the occurred damages and those covered by insurance in the developing countries, which leads to the impoverishment of farmers. Agriculture insurance can have a significant impact on the agricultural productivity of a country and on the improvement of the possibilities for farmers to invest in research and innovations. In some countries, various measures are taken with the support of governments and donors with the aim of developing this type of insurance. The obligation of agricultural insurance is not introduced in the USA, but farmers are encouraged to insure the production by getting help from the state funds intended for catastrophic damages only if they are insured (Sandmark, Tatin-Jaleran, 2013).[5] The importance of the development of agricultural insurance is recognised, inter alia, by the World Bank. An international study of different methods of intervention and support for the development of agricultural insurance by a state is conducted. The World Bank has been engaged in promoting the agricultural insurance in the developing countries through the Agricultural Insurance Development Program and strategy for the period 2013-2015 (Mahut et al., 2013). Agricultural insurance is very challenging for insurance activities, both from the aspect of insurance technique and the organisational and financial aspect (Dick, Wang, 2010). The most important segment of this insurance is certainly crop insurance.

In the Republic of Serbia, agriculture mainly participates in the gross domestic product of the country with about 10% (National Bureau of Statistics, 2013), and in the total

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4    In 2014, the storm and hail in the USA caused damages amounting to $ 3.2 billion, of which $ 2.6 billion was covered by insurance. In Japan, half the damages resulting from the February snowstorm were covered. According to: Natural disasters claimed 41 billion dollars, Tanjug, 01/09/2014.

5    The biggest support from a state in agriculture insurance premium was provided to farmers in the USA and Canada, where the share is 73% of the total premium. In Asia, this support is 50%, while it is 37% in Europe.

employment population with about 20%. Although the role and the specific importance of agriculture to the national economy is emphasised, and that it should be subsidised, developed, modernised in different ways and invested in it, only about 8% to 11% of arable land is insured (All about insurance, 2012), of which farms account for 3%. It is estimated that only about 20% of total arable land in Vojvodina is insured.[6] The total policy premium of insurance is slowly increasing, since it amounted to RSD 1,603,900,000.00 in 2014, for 19,768 insurance contracts concluded, although it is still only about 3.01% of the total annual premium by all branches of non-life insurance of RSD 53,399,931,000.00, for 4,233,374 policies (National Bank of Serbia /NBS/, 2014). The premium of crop insurance in 2013 amounted to RSD 1,503,919,000.00, for 18,658 insurance contracts concluded (NBS, 2013), while in 2012 the calculated premium amounted to RSD 1,126,363,000.00, for 14,871 crop insurance policies (NBS, 2012). Crop insurance is insufficiently represented in the insurance industry in Serbia. A large number of entities participating in agricultural production has not insured its land enough or has not insured it at all, and therefore yields from the same usually depend on the whims of nature, although the insurance costs amount to only 1.5% to 2% of the average of the value produced (Počuča et al., 2013).

## Obligation of precontractual duty to inform a policyholder

The complexity of the insurance service leads to an imbalance in the relations between the parties that is manifested both in the moment of the negotiations for the conclusion of a contract and during its term. The insurers operate under standard conditions that they prepare independently in advance for certain types of insurance. As a professional, an insurer has knowledge and information that are important for the conclusion of contracts, and which were, without a preliminary presentation and clarification to the counterparty, either unavailable or difficult to understand. The market has a wide range of insurance products with the modalities that contribute to competitiveness of insurers and better offer for the potential insured. On the other hand, the aforementioned also hides certain dangers for users of insurance services. Specifically, a person who does not know the profession of insurance may find it difficult to perceive the differences and determine the advantages of certain offers in terms of personal needs and to choose a product that will fully meet his needs.

In order to protect the interest of the policyholders and the insured, especially when they are consumers, special rules establish an obligation of precontractual and contractual duty for an insurer to inform a policyholder. The precontractual obligation of an insurer to inform the consumers is regulated by directives relating to insurance activity in the European Union. The decisions from a number of consumer directives of the European Union have affected the national legislations and some countries have expanded their influence through the general provisions of the civil law. Another

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6    In comparison, 4% of arable land is insured in Croatia, 16% in Slovenia, the average in the countries of the European Union is 28%. Positive examples are Hungary with more than 50%, Sweden with 60%, Austria with 78% and Denmark with 85% of total arable land.

reason it was done was to provide additional protection to all the insured, especially those who do not have the necessary knowledge and are insured against the so-called small risks. Obligations of insurers are also included in this respect, which were introduced with directives in relation to consumers, and expanded to persons in some countries who do not have this property.

Unlike decisions in comparative law that limit the obligation of precontractual duty to inform a policyholder only in the case when he has the status of consumer, a Serbian legislator has decided to impose an obligation for an insurer to report to all the policyholders. A German legislator and a Greek legislator have also acted in this manner. The Serbian law has established the minimum content of the information that an insurer is required to make available prior to the conclusion of the contract to a policyholder. The Insurance Law (IL) prescribes the content of such information and the manner of their delivery (Art. 82-84). Given that this is an important novelty in Serbian law of particular importance to all policyholders, i.e. the insured, we will thoroughly explain the content of this obligation during the negotiations for the conclusion of crop insurance contract.

### Obligation of precontractual information on the content of insurance conditions

The provisions of the Obligations Act (OA) provide for the obligation of an insurer to inform a policyholder that the general and special conditions of insurance are an integral part of a contract and hand over their text in the event that these conditions are not printed on a policy (Art. 902 par. 3). The policy must state that this obligation is performed (Art. 902 par. 4). This provision has the purpose of removing the later, eventual, disputes.

The contents of insurance conditions define the content of the insurance contract. Under what conditions shall the insurance contract be concluded is determined depending on what the subject of insurance protection is and for what risks the coverage is wanted. However, allowing a reasonable period of time for a counterparty to get familiar with such a „separate" document, to be able to study it and state whether it wishes to be bound by it or not, can also be considered reasonable. In this sense, a need exists for a policyholder to get familiar with the contents of the insurance contract before the conclusion of the contract, and not at the moment of signing the policy. In order to allow a policyholder to choose a contract that will meet his needs, an obligation of an insurer is established to, before the conclusion of a contract, present the information concerning the contents of insurance conditions under which the contract could be concluded to the other, legally weaker, counterparty.

When informing a policyholder on the contents of the insurance conditions during the conclusion of a crop insurance contract, an insurer is obliged to state all the information on the basic characteristics and all essential information from insurance conditions. This implies clearly clarifying what is covered by insurance, what is considered an insured event and under which conditions insurance of additional risks can be arranged to a policyholder. If additional insurance under special conditions is contracted, an

insurer is also obliged to pay compensation from insurance for damages arising from additional dangers. The following are contracted as additional dangers in all crops – flood, spring frost and storm; in fruits and grapes – salt; in seed corn – autumn frost. Because of the losses that can be of catastrophic proportions, the risk of drought is most often not accepted in insurance. The exceptions are Spain and Turkey, where the state has intervened in subsiding, insuring and reinsuring catastrophic damages (Reinsurance-All about insurance).

## Obligation to inform about the risks that are covered by insurance and exclusions

The scope of protection of the interests of the insured and the scope of obligation of the insurers after the occurrence of an insured event depend on the manner in which the insurance coverage is contracted. The scope of insurance coverage and possible ways of contracting insurance coverage is determined by insurance conditions. The insurers determine the insured risks in the insurance conditions in two ways. One is through listing the risks with determining the scope of any danger, the so called listed risks. The second approach means that insurance covers all risks that are not expressly excluded with the application of the principle of „all risks". For a policyholder, it is important to be aware of what risks are covered by a standard insurance package, and what risks will be covered by insurance only if that is particularly contracted with the increase of premium.

Most often, the insurers offer the coverage of certain risks in several ways. Doing so allows policyholders to choose a variant of protection that suits them in substantive and financial terms. For a policyholder to choose an appropriate manner, i.e. to know he has a choice, it is necessary to be familiar with this. In this regard, it is particularly required that a policyholder is informed of the risks covered by insurance and the exclusions related to those risks.

With an insurance contract for an agreed premium a transfer of risk is made from agricultural producer to an insurer regarding the damage it may have, due to specified risks, on his agricultural goods, i.e. takeover of risk of occurrence of property damage in the form of reduced quantity and quality of crop yields. The insurance coverage provides protection from various types of risks that are especially typical for crop insurance: production, pricing, institutional and financial (Keller, 2010). Production risks are mainly related to weather conditions, but they are not provided for a variety of plant diseases. They are quantified through changes in the quantities of what is produced, compared to the average agricultural yields. Price risk is reflected in the rise in the cost of raw materials and prices of finished products as compared to the moment of decision-making on the production of a specific product. Institutional risk stems from the risks that occur in political decisions (agricultural policy), while financial covers an increase in capital prices, foreign exchange and inadequate liquidity (Gvozdić, 2005).

According to the number, nature of risk and the manner of their compensation, the crop insurance systems in the world can be divided into: 1) products of individual

coverage for one type of risk, products of combined coverage for multiple types of risks or for all risks; 2) specialised or universal types of insurance; 3) insurance related to the results on individual farms, certain regions or administrative units (Marković, 2010); 4) insurance against all risks in the event of decrease of yields or in the event of price drops (Shields, 2013); 5) yields insurance and income insurance; 6) indexed insurance (Labudović-Stanković, Todorović, 2011).

The insurance against a single risk is the most widespread, and that is most often hail (Marković, 2009). If the protection is provided against multiple types of dangers specified in the insurance conditions (Topdanmark, Vilkår for Landbrug, 2001), e.g. hail and a limited number of other risks, it is a combined insurance. The most complete form of protection is found in Sweden, where loss in expected average yield of harvest is compensated in a certain amount regardless of the adverse event due to which the yield is decreased (Tomić, 1976). Of course, a prerequisite for such a wide scope of insurance coverage is to insure all land, which is achieved by the introduction of this insurance as mandatory, so insuring a large number of the insured and large areas can provide an insurance coverage at a relatively acceptable level of insurance premium. Insuring income obliges an insurer to reimburse a difference between the yield achieved and the contracted guaranteed amount in the insurance policy to an insured, if a decrease of expected crop income is achieved. In addition, the insurance can be based on different indexes, which are connected with possible damages in agricultural production (temperature, time indexes, indexes of rainfall or droughts) which, if achieved, cause the obligation of an insurer to pay compensation from insurance.

## Obligation of precontractual information on other essential elements of a contract

In addition to the type of risk covered by insurance, the contract specifies in detail the other essential elements of insurance. Thus, insurance conditions regulate the rights and obligations of both contracting parties and other significant elements of a contract, such as, e.g. its conclusion, duration, payment of premium, preventing the insured case and saving, jurisdiction in case of a dispute, rights and obligations of contracting parties, the manner of determining the insurance sum, procedures in the process of determination and damage assessment, expertise, determining the fees, franchise (Nykredit, Landbrugsforsikring, 2012).

An essential element of the insurance contract is an insurance premium. An insurer must inform a policyholder about the amount of insurance premium, insurance premium payment method, the amount of contributions, taxes and other costs that are calculated in addition to insurance premium, as well as the total amount of payment, prior to the conclusion of a contract. The insurance premium is the price of insurance. The amount of the premium is determined by an insurer based on risk assessment that he takes into insurance. Thus, in crop insurance against risk of loss of income, base for the calculation of the premium per unit of area of insured crop is the expected revenue per area unit (Generali osiguranje Srbija, Special Conditions, Art. 8 par. 1). A policyholder

determines whether to conclude the proposed contract or not based on his economic abilities and the importance of transfer of risk to an insurer.

From the obligation to inform a policyholder of the period within which an offer obliges him, it is indicated that it is expected that the offer given by an insurer is to be made fixed-term in a way that a date by which a policyholder can make a timely acceptance of the offer is clearly presented. The legislator has highlighted the information relating to data about an insurer as a contracting party as important information, including the information on the business name, legal form, registered office and address of the insurance company with which a contract is concluded. For an insured person, it is important to get familiar with the provisions of the insurance conditions regulating the time of the contract validity and the right to terminate a contract and conditions for termination, i.e. the right to withdraw from the contract.

The obligation to inform also applies to providing information relating to the exercise of rights under the contract and the way to protect the rights of the insured persons. In this sense, an insurer's obligation to provide information on the manner of submission and the time limit prescribed for filing a claim for damages or for exercising the rights on the basis of insurance, as well as the manner to protect the rights and interest of the insured in the insurance company. Insurance company is obliged to provide protection of rights and interest of the insured, policyholders, insurance beneficiaries and third party claimants in accordance with the rules of the profession and good business practice (IL, Art. 15, 139). The legal deadline for resolving a complaint is 15 days from its receipt. A complaint is resolved in the proceedings determined by an insurer by an internal act, respecting the principles of equality, conscientiousness and efficiency. Dissatisfied user of the insurance service can contact the body responsible for monitoring in order to protect his interests. To be aware of this possibility, an insurer is obliged to inform him about the name, office and address of the body responsible for monitoring the operations of an insurance company, as well as the manner of protection of his rights and interests with that body. The competent body for monitoring is NBS, which has organised the manner of protection of users of insurance service in more detail, as well as the manner of mediation in resolving damage claims, filing of complaints of insurance service users and acting on that complaint (Decision, 2015).

## Manner of providing information

When providing information, care must be taken that the information provided is accurate and not misleading, and that it is given in a timely manner. The information is provided in order to provide accurate and detailed information on the characteristics of the insurance service, i.e. of a specific product. A potential policyholder should assess the information received and based on them decide whether to conclude the proposed contract or not and under what conditions (Ebers, 2004). The text and content of the notice must be written in a clear and understandable manner and be prepared in Serbian language. Whether the information is understandable or not, it can be viewed from an objective and subjective point of view. An objective understanding of information

means that it is made so that it is not complex and can be understood by a policyholder who does not know the profession of insurance. Abilities of a policyholder to rationally assess the information received relating to the contract of insurance are different and depend on a number of factors. It shall be assessed whether the information is understandable in any specific situation.

Guideline 1 on the availability of data and information to the financial public and the transparency of the insurance market NBS states, all the information an insurance company, i.e. insurance brokers and agents should provide to potential clients when concluding an insurance contract, mandatory contents of the short descriptions of products, as well as the insurance conditions. This guideline was adopted at a time when the law did not precisely define the contents of information for a potential policyholder. The application of the provisions of this guideline can in an adequate and quality manner prepare the information for certain types of insurance (Ivančević, 2011).

The notice should be given so as to provide a real possibility for a policyholder to get to know the contents of the provisions of the insurance conditions. It is envisaged that a notice can be given in writing or on another durable medium that allows a policyholder or an insured person to store data, access this data and reproduce it in unaltered form in the period that meets the purpose of giving. All costs incurred in connection with the fulfilment of the obligation of information shall be borne by the insurance company and it may not obligate a policyholder or an insured person with them. The obligation to inform a policyholder is also executed if the information was received from a representative of an insurer or through other sales channel, as well as from an insurance agent, so he does not need to receive them directly from an insurer. In the event that a policyholder states that the information was not provided during the process of protection of his interests, the burden of proving that this obligation was performed is on an insurer, or other person who was obliged to provide this information.

### Sanctions for non-compliance with the obligation of information during the negotiations

According to the general rules, in the course of negotiations, every participant is required to provide all the explanations and clarifications to the other party necessary for deciding whether to conclude a contract and under what conditions should it do so. In legal theory, the prevailing view is that the duty to inform is wider in the case when there is inequality of parties negotiating than when the parties are equal (Orlić, 1993). In this regard, we should also observe the obligation of information of a policyholder prior to the conclusion of a contract by an insurer. In comparative law, the obligation of mutual provision of information of an insurer and a policyholder in the process of the conclusion of an insurance contract is considered a duty (Borselli, 2012).

The provisions of OA do not expressly prescribe the obligation of information for an insurer in the precontractual stage, as the obligation of an insured person to report the circumstances relevant to risk assessment does. However, the general provision

sanctioning omission of the obligation information implies that this obligation also exists for an insurer in terms of informing about the fact that affects the mutual relationship of parties in contractual relationship (OA, Art. 268). That would be a failure to inform about the fact that would, if it was communicated, have an effect on the counterparty's decision not to make a decision it has or the contents of such decision would be different (Đurđević, 2008). The authors of this study believe that this also applies to the obligation of an insurer of information prior to the conclusion of a contract, as well as during its term. Failure to inform by an insurer on specific facts, especially on the risks and their scope, may lead to a conclusion of an insurance contract by a policyholder that is not fully suited to his needs. If certain facts were known to him, he would not have concluded it or would not have concluded it under the same conditions. A sanction for omission of the obligation of information would be a possibility of cancellation of an insurance contract, given that there was a defect of will during its conclusion. A defect of will can be expressed as an essential fallacy or deception. Fraud means that a policyholder was misled, either by provoking deceit or keeping in delusion, by an insurer with the intent to conclude a contract. If a contract is concluded under a fraud, a policyholder is entitled to request damage compensation (OA, Art. 61, 65, 111, 268).

IL provides sanctions for failure of obligation of information. In the course of supervision, NBS is authorised to order an insurance company to eliminate illegalities and irregularities in operations if it finds that a company is acting contrary to the obligation to inform a policyholder or an insured person in connection with an insurance contract (IL, Art. 201 par. 1 item 5). A fine is envisaged as a sanction in the case that the prescribed information is not provided or not provided in a prescribed manner (IL, Art. 260 par. 1 item 30). An insurance company can even be left without a work permit if it gives false information about its operations or information that may mislead users of insurance service (IL, Art. 214 par. 1 item 7).

When an agent or an insurance representative participates in the process of concluding an insurance contract, the legislator stipulates that he is obliged to provide the information that an insurance company must provide and additional information in accordance with the legal obligation of precontractual information of a policyholder (OA, Art. 111). The obligation of information exists and has the same scope and contents both during the amendment of a contract and extension of an already concluded contract. The sanction for omission of this obligation is a fine for an agent or a representative (OA, Art. 261 par. 1 item 19 and 25, in connection with Article 95 and 111). An agent or a representative in insurance acts as a professional, so that he can be liable for damage sustained by a policyholder for his failure to fulfil the duties of information according to the general rule.

## Duty to advise

The duty of information may also be, subject to certain conditions, complemented with an obligation to advise. There is a standpoint in comparative law and jurisprudence

that the duty to advise stems from the principle of good faith which the parties must adhere to in contractual relationship (Orlić, 1993). This principle requires that, in connection with the conclusion and the execution of a contract, advice is provided to a counterparty that is consistent with the best knowledge of the one providing advice and appropriate to his business experience. However, the duty of information does not always imply an obligation of interpretation and advising. When the positions of negotiators or contractors are unequal, this obligation is particularly important, so the duty to advise builds on the obligation of information (Orlić, 1993). A court assesses whether advice was provided or complies with these rules in each specific situation.

The duty of information means providing information that describes a product or a service (Ivančević, 2010) which means only a presentation of certain facts. Advising is preceded by an analysis of facts from the information collected and provided by a person who advises, an analysis of needs and assessment of a situation of a person to whom an advice is given. Recommendation or an advice should help the advised person to make a decision that is in his interest. The advice received by a policyholder related to the conclusion of an insurance contract is of particular importance, as he is advised on how to insure and protect against the risks to which he is exposed. An explanation that is provided when advising allows a policyholder to better understand the contents of an insurance contract and certain insurance products.

The Serbian law does not put on the obligation to advise a policyholder by an insurer. In comparative law there are other solutions. In German law, the obligation of an insurer to advise a policyholder prior to the conclusion of an insurance contract is explicitly introduced. The insurer is obliged, in accordance with the assessment of a situation, to examine the desires and needs of an insured person and advise him taking into account the financial element of the premium amount, stating the reasons of a given advice. In addition, he is required to document that he has provided advice, which is, as a rule, done in writing. If he does not comply with this obligation and is guilty of a breach of duty to advise, and an insured person has not expressly waived his right to advice and documentation, an insurer is obliged to reimburse the incurred damages (Gesetz über den Versicherungsvertrag, Art.6.)

The duty to advise a policyholder is also established in Serbian law for an insurance agent. The activities that an insurance agent should take in order to comply with his legal obligations are provided in detail. The obligation consists of providing explanations and advice on the circumstances relevant to the conclusion and implementation of an insurance contract. In this sense, the agent is obliged to determine the needs and requirements of a policyholder or an insurer based on the data received from these persons, to mediate in order to conclude a contract with an insurer who offers the best coverage, to develop the risk analysis and propose adequate coverage, and to state the reasons for advice given in connection with the proposed contract, i.e. why he has given advice to conclude a contract with a particular insurer. For non-compliance with these obligations, a sanction is envisaged in the form of a fine (OA, Art. 261 par. 1 item 17, in relation to Art. 94). An insurance agent provides highly professional services

that are specifically expressed when providing information and advice to the clients. Thereby he is obliged, when performing tasks, to protect the interests of policyholders or the insured persons (OA, Art. 95 par. 1). An agent reports to an ordering party or a third person for any damage caused by his omission to perform the obligation or its incorrect performance (Ivančević, 2014).

## Conclusion

It can be concluded that the normative solutions, relating to the protection of the insurance service beneficiaries, is harmonised with the EU directives and European legal standards, and that in certain segments, our law allows a higher level of protection compared to the one existing in many other national laws. However, the authors also observe an unacceptably large gap between what is prescribed by the legal provisions and their practical applications in everyday life. Bearing in mind the importance the insurance has for agricultural production, a stricter application of the provisions protecting the rights of the insured persons is necessary, as well as more control of compliance with the legal norms by the competent authorities, but also a more active role of the insured persons in the practical implementation of the provisions on the protection of the rights of the insurance beneficiaries.

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# DUŽNOST OBEZBEDJENJA PREDUGOVORNOG INFORMISANJA U OSIGURANJU USEVA I PLODOVA

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## Apstrakt

*Osiguranje useva i plodova predstavlja jednu od najvažnijih vrsta osiguranja poljoprivrede. Sa aspekta tehnike osiguranja, ovo osiguranje je veoma izazovno i zahteva pažljivo sačinjavanje uslova osiguranja i tarifa. Poljoprivrednicima ovaj vid osiguranja može obezbediti sigurnost za slučaj finansijskih gubitaka izazvanih brojnim rizicima kojima su izloženi. Nedovoljno poznavanje mogućnosti koje osiguranje pruža uzrokovano je delimično nepreciznim i nejasnim objašnjenjima koja su osiguravači nudili u fazi pregovora zainteresovanim poljoprivrednicima. U tom pogledu značajnu novinu u srpskom pravu predstavlja obaveza predugovornog informisanja koja je uvedena novim Zakonom o osiguranju (ZO). Na ovaj način je obezbedjena dodatna zaštita korisnicima usluge osiguranja u odnosu na odredbe obligacionog prava. Cilj ove obaveze je da se pregovaraču omogući da stekne jasnu predstavu o bitnim elementima ugovora o osiguranju, da razmotri predloženo pokriće i da donese razumnu odluku da li da prihvati zaključenje ugovora o osiguranju ili ne, odnosno pod kojim uslovima da ga zaključi. Sankcije za propuštanje obaveze informisanja deluju i preventivno i represivno na osiguravače.*

*Cilj ovog rada je analiza pravnog i faktičkog položaja korisnika usluga u pogledu obaveze ekonomski i iskustveno nadmoćnijeg saugovarača na zakonito i potpuno informisanje ugovarača osiguranje pre zaključenja ugovora o osiguranju u jednoj izrazito specifičnoj grani osiguranja, kao što je osiguranje useva i plodova. Primenom induktivno-deduktivnog i uporedno-pravnog metoda istraživanja, ukazano je na pojedina doktrinarna i normativna rešenja iz drugih pravnih sistema, kritički su izložene zakonske odredbe koje se primenjuju u pravu Republike Srbije, te svakodnevna praksa osiguravajućih kompanija.*

***Ključne reči:*** *osiguranje useva i plodova, uslovi osiguranja, predugovorne informacije, savetodavna obaveza*

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# LOCAL ECONOMIC DEVELOPMENT IN THEORIES OF REGIONAL ECONOMIES AND RURAL STUDIES

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## Summary

*In this paper is a detailed analysis of the basics in the theory of economic development during the period from mid last century until today. It states the most significant theories, points out their ranges, offers a critical review regarding their treatment of development, especially regional, rural and local one. It observes those theories according to different classifications existing in scientific literature, primarily the ascend theory, stagnation theory, balanced economic growth theory; then, short-term and long-term development and growth theories; traditional and endogenous theories; economic growth stages theory emphasized after the WW II; structural changes theory; dependency theory, neo-classic counter-revolution theory and endogenous theory as a new growth theory. The analysis becomes wider with a study on development in regional economy theories and rural studies and it systematizes the classification of those theories according to regional economy academics. Distancing ourselves from any particular division as the most suitable and acceptable one, the theories are treated separately and in an historic context, in order to encircle the time framework which from modern theories, dealing with local level development difficulties, resulted. It asserts The Community-led Rural Development Theory, often referred to as the Community Development Theory, or marked as Bottom-up Partnership Approach. The analysis of development theories asserts that mixed exogenous - endogenous approach to development links the rural/local development to the globalization process mostly due to fast technology changes of the IT and communication sectors.*

***Key Words:*** *economic growth, local economic growth and development, exogenous, endogenous and exogenous – endogenous development*

**JEL:** *Q10, R11, O13*

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## Introduction

The topic this analysis deals with is complex and refers to local economic development in the theories of regional economies and rural studies. Local economic development is composite and complex area that, in addition to economic development policy including agriculture, also incorporates other divisional, structural and social policies, local infrastructural development policy, as an indispensible ambience for local economic development, as well as all sorts of civic initiatives contributing to local communities' improvement. The first part of the analysis shows a short review of economic theories of both rural and local areas. As far as they are concerned, the first part briefly examines Regional development theories, Traditional models of regional economic development, Pure agglomeration models of regional economic development, Models of local community regional economic development and Models of regional economic development territorial novelties. The second part illustrates the historic context of the theories. Economic scholars started studying economic growth following the disintegration of the colonial system and creation of independent states.

## Methods to be applied

The paper is primarily used qualitative analysis that is necessary extent and scope supported by quantitative analysis where it was for the space and needs. In examining the phenomenon used the method of analysis, while in the process of concluding and finding solutions used method of synthesis. Basically, have been used as inductive and deductive method of scientific analysis and synthesis. Where it was necessary, we used historical method and scientific monitoring and reasoning as well as the comparative method.

## Economic theories of rural and local areas

Rural, and particularly local, development could be observed through the regional economy prism as well as from a point of view of multidiscipline rural studies, and not only trough basic economic development theories. By comparing these two segments regarding economic development of rural and local areas, it can be said that rural studies are dealing more with organizational aspects of rural economy, while the regional economy scholars are more concerned with combined effects of production, labor and capital, as well as with other factors that often influence them. In case when development theories within rural studies implicitly assume accessibility of the production, labor and capital factors, these theories do not differ much from the regional economy field theories. It could actually be said that, regardless of different terminology and different specialists, a certain overlap of these theories appears in Table 1.

**Table 1**: Matching of development theories within regional economy

| Exogenous development theories | →→→→ | Pure agglomeration models |
|---|---|---|
| Local community stimulated development Brayden stationary resources theory | →→→→ | Local community theories |
| Exogenous-endogenous development theories | →→→→ | Territorial innovations theories |

*Source: Terluin, 2013.*

The growth pole theory links the exogenous development theories to the Pure agglomeration models, while local regions factors link the endogenous development theories to local community ones. Although the concept of innovations has not been mentioned explicitly in the combined development exogenous-endogenous theories, it is obvious that the economic dynamic is a consequence of mutual influence of both local and external factors, where, among other things, innovations exchange. Thus, these theories could be linked to the territorial innovations theories.

In chronological presentation, the theories are offered mostly according to the rural study scholars' viewpoints, so that herein the regional economists' development theories will be only briefly commented. The regional economists' analysis consist of two dominant viewpoints, spatial-economic models based on neoclassic assumptions, and institutional perspectives of regional economic development in which the complex networks of social, cultural, political and historic regional factors are embedded (Boekema et al., 2000).

## Regional Economic Development Theories

The case study of the regional economy can be divided into macro-economic and micro-economic aspect. Regional macroeconomics mainly analyzes the comparative economic characteristics of the different regions within the national economy. Regional macroeconomics deals with issues involving comparative economic growth, variations in employment levels between the region and the movement of production factors between regions. In terms of regional macroeconomics developed some econometric models that are essentially similar models of national economies. Instead of mutual relations between the different countries they give attention to the mutual relations between the regions. There are various specifications of theories and models of regional development. Basically, we can distinguish between at least four classifications are listed in Table 2.

Unlike regional macroeconomics, microeconomics more regional deals with the problem of location and interaction of specific economic activities. It discusses the impact of space and distance to economic activity and is not engaged in the region as a homogenous unit. The subject of regional microeconomics deals with the theory of location. The term spatial economy is sometimes used as a synonym for the regional economy, although in that event the emphasis on the significance of space and distance more micro than the macro aspects. Regional economy, especially its macro aspect, was developed largely as an applied analysis and its growth reflects the political concern

about regional differences and economic success of various regions.

The first theory based location set by German theorist's locations, Heinrich von Thünen (1826), which explored the relationship rents, prices of agricultural products and the distance of the market. But generally considered to be the founder of the theory of location Alfred Weber (1868-1958) according to whose theory the main location factors considered: (a) transportation costs, (b) labor costs and (c) agglomerative-deglomerative factors. In the literature it is known the so-called. "Weber's locational triangle", which seeks to determine the optimal location of production due to the spatial accommodation of raw materials, labor and markets selling.

The common item in a number of regional economy scholars' theories definitely is a focus on explaining the production growth in a region. Table 2 shows that the production in a region is directly linked to its industrial competitiveness. Since regional economic development theories conceptualize in different ways the regional industrial competitiveness, herein the criteria for the classification of theories is the relation between the companies' competitiveness and regional production, expressed in the production function $Y = f(X,W,Z)$.

Depending on what factors are included into the production function, the regional economic development theories can be divided in for main groups: Traditional models, Pure agglomeration models, Local milieu models and Territorial innovation models (Terluin et al., 2003). The order of these models is made in accordance with the production function factors' growing complexity. Table 2, illustrates the classification and basic regional economists' theory methods.

**Table 2**: Classification of theories according to regional economy scholars

|  | **Production function*** | **Theories** |
|---|---|---|
| Traditional models | $Y = f(L,K)$ | Neo-classic growth theory<br>Keyne's approach: export theory base |
| Pure agglomeration models | $Y = f(AE,L,K)$ | Cumulative causation theory<br>Growth pole theories<br>New economic geography theories |
| Local community models | $Y = f(LM,L,K)$ | Endogenous growth theories theory<br>Theories based on labor organizational changes |
| Territorial inovation models | $Y = f(I,LM,L,K)$ | Incubator theories<br>Products' life cycle theories<br>Innovative environment theories<br>Porter's national competitive advantage theory<br>Ilery's induction regional development theory<br>Storper's theory on regions as a chain of non-exchanged interdependence |

*Y: production; L: labor; K: capital; AE: agglomeration effects, which occur due to external

factors or volume economy; LM: local milieu which means factors such as space, human capital, technology, networks, culture, politics etc.; I: innovation.

*Source: Terluin, 2003.*

## Regional Economic Development Traditional Models

The first group of the regional economic development theories, herein marked as traditional models, assumes that the production presents the function of labor and capital entry. Main representatives of this theory group are neo-classic theories of growth and theories of export basis. Neo-classic growth theories say that the decrease of regional differences depends on availability and inter-regional mobility of the production, capital and labor factors. Since the production functions are identical, capital tends to move into the regions with cheap workforce, while the workforce will take the opposite direction. These trends will continue until the return of capital and laborers' salaries become identical in all regions. Developing the neoclassical growth theory greatest contribution was given by Robert Solow and Trevor Swan.

The export base theory splits economic activities into those producing for exports and non-basic activities producing for internal use. The growth in basic activities is conditioned with money flows in a region, it increases demand for goods and services inside the region and causes a raise of non-basic activities volume.

## Pure Agglomeration Models of Regional Economic Development

In the second group of prominent theories of pure agglomeration models, production depends on labor and capital concentration in a particular place which leads to the external economy volume effects. For example, the basic idea of the growth pole theories is the existance of an initiator – operating company that acts as a pillar and stimulates the growth of other industries and businesses through a multiplicator effect. The most famous representative of the theory of growth poles were Francois Perroux and Hirschman Friedman.

Main assumtion in the theory of cumulative causation, the second group within agglomeration models is that once the regional differences occur, a self-reinforcing process starts and, unless there are catastrophic events, it maintains the growing areas status. The agglomeration of economic activities and people further expands the rich regions. This widening of production results leads to migrations (often of highly qualified workforce) from areas that are lagging behind into developed regions. This cumulative process of concentration and expansion of economic activities in rich regions has a number of harmful consequences for the so-called lagging behind regions: they are deprived of workforce and capital. The largest contribution to the development of the theory of cumulative effects gave Gunnar Myrdal.

One of recent opinion in this theory group of pure agglomeration models is "new economic geography" (NEG). Usually, NEG models assume two economy sectors – agriculture and industry. NEG, studies spatial population concentration and / or

economic activities in conditions that lead to an increased return to the volume economy and a monopole competitiveness (Fujita et al., 1999). According to this theory, already big domestic market can cause further cumulative process of attracting companies and labor. Changes in industrial clusters' concentration location can occur due to amended transport costs. Development of the theory of economic geography given by Paul Krugman and Masuhita Fujita.

## Local Milieu Models of Regional Economic Development

Local milieu (environment) theories stipulate that different factors, such as workforce ability, technical and organizational knowledge, social and institutional structures, influence both capital and work incomes. The most important representatives of the local community models and theories of endogenous development are Romero (1986-1990), Lucas (1988), Grossman and Helpman (1991). The difference between endogenous growth models and theories of growth occurs as a result of changes in work organization. Endogenous growth models and development usually refer to areas surrounding cities, but are not well connected to a city. Industrial district model is an example of such type of theories. In that system, the agglomeration of small and mid-size companies exchanges semi-finished products what can be described as a collective production process. The relations between enterprises and people in a local system are not determined by regulations only, but largely depend on local rules and customs rooted into tradition and culture of that region. (Iacoponi et al., 1995). The other kind of premises in local milieu theories is development theory based on labor organizational changes. Starting assumption in this theory is that the workforce structure in a sense of skills, costs, mobility, numbers and alike, varies from region to region. Those differences in workforce can influence a decision on a company location: areas with conditions for profitable production attract investments, while the lack of them takes place in areas where possibilities for profitable productions were exhausted.

## Territorial Innovations Models In Regional Economic Development

According to the fourth group of regional economy theory, in addition to labor and capital, an important factor of growth and development of a local milieu is the diffusion of innovations. An innovation herein should be understood in a wider context. It includes products', processes' and organizational innovations, as well as social and institutional innovations at a level of industry, region and nation (Morgan, 1997, p. 492). Stressing innovation implicates that technical possibility of an adjustment to innovations is crucial for winning over new types of production and entering new markets. Different theories, such as incubators theories, product's life cycle, innovation-surrounding theory, Porter's national competitive advantage theory, Ilery's induction regional development theory) and other belong to this group.

## The Development Of The Theory Of Regional Economic Development

Table 2. Depending on which factors are involved in the production function theory, regional economic development are divided into four main groups: the traditional

models, pure agglomeration models, local communities and models of territorial innovation. Depending on the current problems by theorists at that time studied and gave them important while neglecting and excluding certain important factors of development of the production function. Representatives of the local community model of the production function $Y = f(LM, L, K)$ excluded factor of agglomeration effect (AE) that were previously represented by representatives of the clean agglomeration models in its function $Y = f(AE, L, K)$. Representatives of territorial innovation models that expand the production function model of the local community by adding a factor (I-innovation), but they do not take into consideration factors of agglomeration effect in its production function Y = f (I, LM, L, K). Recruitment of the production function and factor of agglomeration effects get production function (Y = f (I, LM, L, K, AE), which is more comprehensive. One of the deputies OVG model at this time would represent theorists endogenous - exogenous model of regional economic development.

Future development of the theory of regional economic development would go in the direction of the endogenous-exogenous economic and institutional development. That the endogenous-exogenous regional development will increasingly developed through various institutional forms. Institutional development and institutional connections will depend on the state system, the state of development of both the level and the local level.

## Regional Economic Development Theories In Historical Context

Economic scholars and economic policies creators start studying economy development process, aiming at creating successful economic strategies and development policies only after the decomposition of the colonialism and creation of independent states. Deliberation of independent development of less developed countries, i.e. economic and social aspects of the third world countries, was not an aim of the developed, while the underdeveloped countries had no capacity of their own.

In the 1940s and 1950s, an economic war became a main goal of newly founded states' economic policies. It was consider that the economic warfare and modernization would *per se* eliminate both income and social disparities. Other economic and social goals were considered corresponding, somewhere even because of the GDP growth. The acceptance of the GDP increase as an aim, and developing means to achieve growth and development, represented a conceptual base of the theories in the 1950s. The main theoretical contributions to the issue of economic development during this decade were evident in one-sector model and in pointing out investments. The most important theories and economic development concepts in 1950s are: Big push theory by Rosenstein-Rodan (1943), Balanced growth by Nurkse (1953), Rostow's Take-off into sustained growth (1956) and Critical minimum effort thesis by Leibestein (1957).

Already in the 60s, an analytical framework based on economic dualism aiming to explain the reciprocal roles of two sectors in development process, dominated. Two-sector model by

A. Lewis (1954) still gave the agriculture a passive role as a potential source of "unlimited labor" and "agriculture surpluses" for a modern (industrial) sector.

In the second half of 1960s, there was a change in development theory regarding the agriculture and its role in economic development. Instead of agriculture as a passive sector from which capital should be squeezed out for the industry expansion, a conclusion was that the agriculture could contribute more as an industry partner in a role of resources provider. In early development phases, it can generate the rise in agriculture production and productivity what, in turn, eases the transfer back from agriculture into a modern, industrial sector (Trobecke E., 2006). Johanston B. and Mellor. J (1961) both ascertain that a powerful and dynamic agriculture sector is a key factor for industry improvement and for achieving national economy's fast growth rate.

After this period, in 1970s, the failure of growth strategies based on GDP led to a thorough screening of economic and social development process. Main development problems that became acute, and could not be ignored in this decade, can be summarized in the following way: (i) increase in unemployment and increase in awareness of unemployment, (ii) unequal income distribution tendency within a country (as it was the case immediately after the WW II); (iii) large number of poor people who lived beyond the poverty line; (iv) continuation and acceleration of rural-urban migrations with urban congestion as its result, and, finally (v) worsening of external position of developing countries. Mostly due to the consequences of these problems, developing countries tried harder to solve them requiring equal distribution of wealth in order to lessen the rate of absolute poverty in relation to an economic growth regarded *per se* as an aim. Besides, this lessening of absolute poverty should be achieved mostly through productive employment in traditional sectors.

By mid 70s, GDP, as a dominant overall goal, was largely rejected. The assumption that a total growth was a synonym for both economic and social development, and alternatively, that it would secure the achievement of other development aims, came under scrutiny and critics check and rebuffed by many circles. The launch of World employment programme in 1969, signaled that a primary goal must be linked to the increase of living standard of the poor through employment boost (Thorbecke E., 2006).

The change in understanding development as a process that has economic growth and reduce of poverty at the same time as its goals influenced a number of conceptual and empirical inputs. *The first set of inputs can be called the integrated rural and agricultural development.* Two versions of a strategy oriented towards distribution surfacing in these two decades overlapped partially. Those were theory of redistribution with growth and basic needs theory. *First theory* is basically of an incremental nature, resting on existing distribution of means and factors and demanding increased investments into project transfers (mostly public, but maybe even into private) for the benefit of the poor (Cheneri et al., 1974). *Second alternative strategy* in 1970s was basic needs strategy. It suggests structural changes and redistribution of the initial property ownership, particularly land reform together with set of policy instruments such as public investments. Basic needs are defined by two elements: (i) a family minimal demands for private spending for appropriate

nutrition, accommodation and clothing and (ii) basic services for community as a whole, such as drinking water, sewerage system, health and educational institutions. An integrated rural development is a complementary policy in the agriculture sector. In short, new approach aims at crediting and technically equipping traditional sectors directly. The name of this strategy is unimodal strategy of agricultural development (Johnston and Kilby, 1975). *Third type development strategy* emerges from neo-Marxist theory of underdevelopment and dependence. This approach was radical, if not revolutionary in its nature. It called for huge redistributions of capital and abolishment a majority of private ownership. Neo-Marxist, as well as structural studies of agricultural development, all say that traditional agriculture is neither stationary nor effective, and that the allocation of recourses cannot be separated from either the wealth distribution or the production organization. They also say that efficiency does not necessarily follows the realized surpluses, that the social relations in production can inhibit the accumulation and determine the shape of technological changes. In addition, they stress that the role of a state as a coercion factor in the primitive accumulation is primarily economic and not political.

According to the Marxist apprehensions, rural areas have no possibilities for endogenous development, since they are oppressed and inactive. Pre-capitalist rural economy was categorized by self-sufficiency. According to the Marxist apprehensions, the influence of industrial development on rural areas leads to the replacement of self-sufficient production by export-oriented agricultural production and the substitution of imported goods of mass production with local manufacture products. These changes stress out the exogenous nature of an economic development process. In connection with that, Lipton (1977) develops a concept of rural bias in the economic development process. He, as some other authors, has previously noted the existence of spatial differences or inequality at the poverty level, i.e. well-being, between urban and rural areas. Its consequence is a conflict between rural and urban regions emphasized by poor countries, which again indicated the reality of the conflict existing in theory between capital and workforce, and between domestic and international interests.

In the 80s, extremely heavy burden of the external debt that represents a cumulative effect of a decade-long borrowing and manifests itself in a huge budget and payments deficit in the majority developing countries coupled with higher interest rates and recession in creditor countries, has radically changed development and aid from environs. *Achieving foreign trade balance became dominant goal* and one of basic conditions of economic growth and development. Mexican economic crisis in 1982, spread quickly to other parts of the so-called third world. The crisis was so big that it, at least for some time, put at risk the survival of international financial system (Thorbecke et al., 2006). Due to that, the beginning of the 80s is characterized by skepticism regarding the efficiency of conventional development policy instruments. Exogenous approaches to rural development were disapproved of because they advocated the following: independent development but still conditioned by financial aid and the decisions by distant agencies and other executive bodies; then, uneven development that encouraged the expansion of individual sectors, areas and certain kinds of labor, and neglected non-economic aspects of rural life. There is also the so-called

*destructive development* that overlooked cultural and differences in rural area environment, as well as dictated development which external experts and planners suggested (Lowe et al., 1999).

In the 80s, these difficulties led to a change towards the so-called rural areas endogenous development theories. They were based on a viewpoint that specific recourses of an area – natural, human and cultural – are key factors for sustainable development of that area (Ploeg et al., 1995). According to this concept, human capital helps technical progress becoming internal development factor partly, instead being dominantly external one. Cited sources for this concept are: (i) permanent innovations and investment into research and development and (ii) diffusion of knowledge and transfer oh *know-how* (Thorbecke et al., 2006).

According to Ray (1977), there are three basic characteristics of endogenous development. *Firstl*y, development activities are practiced in respect of territorial, and not sector principle, whereby the theories are less nationally determined. *Secondly*, economic and other development activities are reoriented in a way to maximize the return of profit into local area limits by means of evaluation and usage of local resources - material and human. *Thirdly*, the development is formulated with an accent to needs, capacities and possibilities of local population, what means that local area should develop capacities for undertaking some responsibilities regarding their social-economic success. "Working partnership" - collaborative agreements between public bodies, or between public, private and volunteer sectors, are recognized as a mechanism of inception and management of the endogenous economic development concept.

The second set of theories links growth and development to trade, more specifically to foreign trade orientation of a country. The countries that liberalize and encourage the trade are growing faster since in addition to trading goods the transfer of technology happens as well. The acceptance of innovative technologies contributes to human capital expansion what in turn helps development concrete as well as other economic sectors.

Yet another set of contributions could be called "new institutional economy". A focus on strategic behavior of both individuals and organizations inside an imperfect market represents the highest progress. The theories of imperfect and asymmetric information, or broadly speaking, transaction costs, secure logical explanation for existence of institutions as instruments for reduction of transaction costs.

The estimation could be that in the 80s liberal approaches to development theories were mostly present.

In the first half of the 90s, stabilization and adjustment remained as dominant goals. Developing countries ever more clearly saw that crucial and radical institutional changes that will reduce corruption and enable successful transition towards market economy are precondition for the successful transition process and adjustment to new business conditions.

Probably the most important issues in the 90s are the role of a state and the role of a market in development process, and in connection to that, identification of most commendable institutions for speeding up the economic growth process and social-economic development.

In many aspects, development strategy in the first half of the 90s was built on the foundation of theories from the last decade and was made of the most of their strategic elements. However, as the time went by, two new opposite standpoints about the adjustment theory and its influence on development process appeared. The World Bank is the most vehement advocate of the first standpoint known as *orthodox view*. Its basic postulate is that a timely package of stabilization and adjustment measures is worthwhile. Countries that have progressed in implementing this package made a turn regarding growth rate and other indicators of economic growth and development. Opposite to this approach, there is *heterodox approach*- best explained trough the concept of "adjustment with a human face". UNICEF advocates it. This concept supports the need for adjustment, but, it points out that the approach backed by the World Bank achieves short-time stabilization and that this concept does not effectively influence the deeply rooted structural economy shortages that are a main reason for macroeconomic instability and economic stagnation.

It should be stressed that in the 90s many scholars promoted endogenous development approach. It can be interpreted as a local development, mostly derived from local impulses and mostly based on local recourses (Picchi et al., 1994; Terluin et al., 2003). Unlike in exogenous models, the development advantages remain within local economy, and local values are respected (Slee et al., 1994; Terluin et al., 2003). Three specific rural development theories within this approach are: rural development adjusted to rural community theory; theory of property potentials to create a competitive advantage in rural community and a community development model through creative destruction.

Finally, there is *the community-led rural development theory*, so named by Murray and Dunn, 1995. It focuses on strengthening development capacity of local communities themselves. Such theoretical approach is found in standpoints of Keane and Cinneide who in 1986 named it the *Community development theory*, also known as bottom-up partnership approach, which Mannion in 1996 used to mark this theory.

Institutional structures' partnerships and adjustments are seen as main way in the process of building these capacities. Institutional adjustment is of a particular importance because of linkage between local, regional and national authorities since this type of development demands institutional structure that encourages and responds to the initiatives by "bottom-up" principle.

In connection with that, in 1998 Bryden points out in his theory that the increase of capital mobility, trained workforce, information and other goods and services are not a first-rate basis for creating a rural development strategy. Instead, *Bryden suggests that rural areas' advantages should be based on stationary resources that cannot be compared and contended.* According to this theory, there are four types of stationary resources: social capital, cultural capital, environment as capital and the capital of local knowledge and skills. Economic development of rural areas will depend, according to Bryden, on the combination of tangible / material and non-material stationary resources, as well as on the way of their mutual relations in a local context (Turluin, 2003).

In 1998, the next concept, the model of community development through destruction that Mitchell wrote about refers to the usage of a village idyll for local economic development. This approach was successfully implemented in creating tourist destinations marked as heritage shopping villages. Examples of such places are Nelson and St. Jacobs in Canada and Abarracin in Spain. This rural development theory assumes that the expansion of traditional villages is based on a mutual relation among three variables: entrepreneurial investments, usage of rural heritage and the destruction of rural idyll. Basic idea of this theory is that the entrepreneurial sale and rural heritage marketing bring in / lure modern consumers in search for nostalgic return to their rural roots. The result of rural heritage spending provides the entrepreneurs profit for re-investment in this tourist destination. This can lead to a cumulative process of an increase in rural heritage spending and new investments. After some time, an overexploitation and the destruction of rural idyll happen.

At the beginning of XXI century, an opinion was that the economic development scholars ran out of "big ideas". The most important contribution to the development doctrines in this decade is not merely theoretical, but also methodological. It is about the usage of random and controlled experiments to evaluate development policy efficiency. Controlled experiments have not lightened up the basic mechanism that leads to successful results. Main objections to this methodology are: 1) simplification of the model that does not explicitly point out the structure of the model and making this adjusted form to omit the given hypothesis, and 2) a total negligence of the economical intervention effects to achieve a general balance. Despite these shortcomings, this methodology contributed in creating a big number of excellent empirical studies (Thorbecke, 2006).

New political economy points out the role of investments in economic growth theory. One of its main principles is that equal distribution of initial income and wealth leads to an economic growth. This new approach is totally opposite to a classic stand which says that an unequal distribution of income is a pre-condition to growth based on an understanding that the rich / capitalists save more of their income than the poor / workers.

A key question is linked to an evaluation of the present form of globalization / integration and their benefits for the economic growth process that unites economic growth, leads to the reduce of poverty and creates positive distributive effects. That is why *it is said that mixed exogenous-endogenous approach to development links rural development to the process of globalization, mostly due to fast technological changes within the IT and communication sectors.* Therefore, according to this theory, rural development consists of a complicated and knotty network of relations in which resources are mobilized and in which process control is made of mutual act by local and external powers / factors (Terluin, 2003).

According to the opinion of certain authors (e.g. Lowe et al., 2002; Durand, Huylenbroeck, 2002) *"multi-functionality" could also be considered as a way to achieve rural development.* This opinion contradicts the approaches of liberal scholars, as well as those of interventionists. The multi-functionality theory differs from other modern rural development theories, such as a network approach, since its basic both mean and goal are the expansion of agriculture and farming enterprises.

## Conclusion

Based on a complete argumentation that was stated in a complex approach to its realization, it is fair to conclude that contrary to theories oriented onto the GDP growth with development polarization as its consequence, after the 1970s, a new detailed questioning of economic and social development took place. Main development problems became acute and could not be ignored any more. Thus, the meaning of a development as a process that simultaneously has economic growth and reduction of poverty as its goals has changed. That has influenced a number of both conceptual and empiric contributions. Therefore, what characterized the beginning of the 80s was skepticism about the efficiency of conventional development policy's instruments, making economic scholars to start looking for dominant alternative theories of regional development. Exogenous approaches to development were criticized because they advocated an independent development yet conditioned with financial aid and the decisions by distant agencies and other executive bodies; then, an unequal development occurred, encouraging only some sectors, areas and some kinds of labor, and at the same time, a disregard of non-economic aspects of rural / local life also happened. These difficulties in the 80s lead to a shift towards the so-called endogenous development theories based on an approach that specific resources of a region represent a key to its sustainable development. In that sense, by joining other similar opinions, a combined endogenous-exogenous model is advocated as the most convenient concept for developing countries.

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# LOKALNI EKONOMSKI RAZVOJ U TEORIJAMA REGIONALNE EKONOMIJE I RURALNIH STUDIJA

*Bahrija Kačar,[4] Jasmina Curić,[5] Selma Ikić[6]*

## Rezime

*U radu se detaljno analiziraju osnove teorije ekonomskog razvoja u periodu izmedju pedesetih godina prošlog veka do danas. Navode se najznačajnije teorije, ističu njihove domete, daje se kritički osvrt sa aspekta njihovog tretmana razvoja, posebno regionalnog, ruralnog i lokalnog. Posmatraju se teorije prema različitim klasifikacijama koje se mogu naći u naučnoj literaturi, pre svega, uzleta, teorije stagnacije i teorije uravnoteženog privrednog rasta; zatim, kratkoročne i dugoročne teorije razvoja i rasta; tradicionalnih i endogenih teorija; teorija etapa privrednog rasta koje su naglašavane nakon drugog svetskog rata; teoriju stukturnih promena; teorije zavisnosti, teorije neoklasične kontrarevolucije i endogene kao nove teorije rasta. Analiza se proširuje analizom razvoja u teorijama regionalne ekonomije i ruralnih studija, sistematizuje klasifikaciju ovih teorija prema teoretičarima regionalne ekonomije. Ograđujući se od svake podele pojedinačno kao najprikladnije i najprihvatljivije, tretiraju se posebno i u istorijskom kontekstu kako bi se omeđio vremenski period u kome nastaju savremene teorije koje tretiraju lokalni nivo sa svim razvojnim problemima koji ga karakterišu. Ističe se pojava tzv. teorija razvoja koje sprovodi ruralna/lokalna zajednica (The community-led rural development theory). koju često nazivaju teorijom razvoja zajednice (Community development theory), ili koju obeležavaju kao "partnerski pristup odozdo na gore" (bottom-up partnership approach). Analiza teorija razvoja, ističe da mešoviti egzogeno-endogeni pristup razvoju povezuje ruralni/lokalni razvoj sa procesom globalizacije najviše zahvaljujući brzim tehnološkim promenama u informacionom i sektoru komunikacija.*

***Ključne reči** : ekonomski rast, lokalni ekonomski rasti i razvoj, egzogeni, endogeni i egzogeno – endogeni razvoj.*

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# MARKET ORIENTED APPROACH OF REVEALED COMPARATIVE ADVANTAGE IN INTERNATIONAL TRADE

*Boris Kuzman[1], Milan Stegić[2], Jonel Subić[3]*

## Summary

*Market oriented relative comparative trade advantage (MORTA) represents new approach to a widely accepted model of revealed comparative advantage (RCA) presented for the first time in this paper. The applied model was used in the analysis of agro-food trade in order to identify changes in the level of relative comparative trade advantage between the EU and Serbia before and during the implementation of the Stabilization and Association Agreement with the EU (2004-2013) on the basis of Eurostat data and data of the Statistical Office of the Republic of Serbia. The analysis aims to show whether Serbia and the EU, each on their side, were able to take advantage of the trade liberalization, especially in relative terms. The research results show that Serbia in terms of trade liberalization with the EU manages to secure the growth of the product with relative comparative trade advantage, but on the other side EU fails to largely use preferential status in trade with Serbia.*

***Key words:*** *market oriented revealed comparative advantage, agro-food trade, EU, Serbia*

**JEL***: Q17, F14*

## Introduction

As a result of the conflict in the former Socialist Federal Republic of Yugoslavia and in Kosovo and Metohija, the European Union (EU) offered new policy framework called Stabilization and Association Process as a clear perspective for Western Balkans countries towards EU accession. In terms of trade relations, Stabilization and Association Agreement (SAA) (Official Gazette, 83/2008) has been established in order to provide full liberalization

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of trade relations[4]. Serbia, as a state in which the agro-food sector is more important than the EU average (Strategy of agriculture and rural development, 2014), strived to take full advantage of the export liberalization to the EU as its most important market, but was also concerned by the liberalization of import regime in trade with EU primarily as a result of the low level of competitiveness of the domestic agro-food sector. The importance of monitoring changes in terms of relative export competitiveness, led to development of revealed comparative advantage model (Liesner 1958, Balassa 1965) established in the second half of the twentieth century. Over the time the model evolved, including import and export as equally important factors of comparative advantage (Vollrath 1991, Leromain and Orefice 2013, Laursen 2015, etc.). Bearing in mind that the research so far dealt with the comparison of the comparative advantages of individual countries or group of countries in relation to their position to the World trade, authors provided new approach that will ensure monitoring of relative comparative trade relations between the two countries, especially comparing position of one country on specific market to its competitors on the same market. MORTA model will be used in order to recognize changes in relative comparative advantage in the process of trade liberalization between the EU and Serbia.

## Methodology

Analysis of international trade based on the use of historical data (ex-post analysis), was first conducted by Liesner who tended to quantify comparative export advantage by comparing the observed exports of industrial products in the UK compared to their European competitors (Liesner, 1958). Although Liesner was the first scientist to quantify export comparative advantages, popularization of this model began in 1965 when the Balassa B. modified Liesner's model. Balassa for the first time used the term "revealed comparative advantage", which in practice often referred to as the Balassa index (Balassa, 1965). Critics of the concept of "revealed comparative advantage" revealed weaknesses in the theoretical and empirical sense (Leromain, Orefice, 2013, Yeats, 1985, Laursen, 2015, Dalum et al., 1998, Jambor, 2013, Benedictis, Tamberi, 2001).

Balassa index is a widely used model of identification of industry specialization in international trade and over the time became the basis of many future models (Bowen 1983, Lafay, 1992 (Sanidas and Shin 2010), Kanamori 1964, Vollrath 1991 (Vollrath 1991), Dalum et al 1998, Proudman and Redding 1998, Hoen and Osterhaven 2006, Yu et al.2009.g., Michaely 1962/67, CEPI 1983, Grubel and Lloyd 1971, (Ballance et al.1987), Laursen 2015, and others). Implementation of the revealed comparative advantage model in agriculture was applied by Vollrath 1989, Utkul and Seyman 2004, Fertő and Bojnec 2007, Qineti et al. 2009, Bojnec and Fertő 2012, Torok and Jambor 2012, Raičević et al., 2012, Ignjatijević et al. 2014, and others.

Taking into account previous researches, Market-Oriented Relative Trade Advantage

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4 Certain number of products were not subject to SAA such as raw tobacco, raw and unrefined sugar and sunflower oil for human consumption which kept the same level of customs duties as before ITA implementation (Katić et al. 2008)

(*MORTA*) is calculated as follows:

$$MORTA = MSXA - MSIA$$

Calculation of MORTA index represents the difference of market-oriented symmetric[5] relative comparative advantage in exports (*MSXA*):

$$MSXA = \left( \frac{MXA_a^{i,m} - 1}{MXA_a^{i,m} + 1} \right) = \frac{\left( \left( \frac{X_a^{i,m}}{X_n^{i,m}} \right) - 1 \right)}{\left( \left( \frac{M_a^{w,m}}{M_n^{w,m}} \right) + 1 \right)}$$

and market-oriented relative level of import penetration (*MSIA*):

$$MSIA = \left( \frac{MIA_a^{i,m} - 1}{MIA_a^{i,m} + 1} \right) = \frac{\left( \left( \frac{M_a^{i,m}}{M_n^{i,m}} \right) - 1 \right)}{\left( \left( \frac{X_a^{m,w}}{X_n^{m,w}} \right) + 1 \right)}$$

where $X$ represents export, $M$ represents import, $i$ represents country, $m$ represents observed market, $w$ represents group of countries that has trade relations with observed market $m$, $a$ represents observed product, $n$ represents all products.

If *MSXA*> 0, relative comparative advantage in export is revealed in relation to all exporters of a observed market $m$. If *MSIA* <0, relative penetration level of the product $a$ from market $m$ in country $i$ is low. Comparing to *MSXA* and *MSIA* which gives values in the range -1 to +1, *MORTA* gives values ranging from -2 to +2. In cases where the *MORTA*> 0, relative comparative trade advantage on observed market.

## Data

Analysis of imports and exports data carried out on the base of the Standard International Trade Classification (SITC) rev. 4 (UNSTAT 2006), whereby the agro-food products, considered all the products presented in the framework of the SITC *Section 0 - Food and live animals* and *Section 1 - Beverages and tobacco* at the level to level five digits. Period 2004-2013 has been analyzed ensuring observation of trade movement in the period before and during the implementation of SAA[6].

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5    Symmetry is based on the concept of "revealed symmetrical comparative advantages" (Leromain, Orefice 2013)

6    Due to the fact that in the observed period EU enlargement occurred on three occasions (2004, 2007, and 2013), research will focus on all 28 EU Member States (EU28). Although the EU's enlargement occurred gradually, analysis performed take into account EU28 during observed period in order to avoid obtaining distorted results.

The data used for research purposes are the official data of the Serbian Statistical Office (SSO) (available at: http://webrzs.stat.gov.rs/WebSite/public/ReportView.aspx) and official data of the Directorate General Eurostat (Eurostat) (available at: http://ec.europa.eu/eurostat/web/international-trade/data/database) as the official statistical body of the EU, bearing in mind that the methodology of presenting information to each other are completely aligned expressing the value of FOB type in exports or CIF type in import (available at: http://webrzs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=288 and Eurostat 2014). In the case of the EU, data relates to intra and extra trade.

Data published by the SSO and EUROSTAT are statistical data, and all values are expressed in current prices. Bearing in mind that the survey covers a period of 10 years, presenting the results of research in current prices will not provide realistic results of trade changes. In this respect, all values used in the study, are re-calculated into constant prices in order to realistic results that can be followed over time. Converting current to constant prices, in this paper unit value index (Unit Value Index) is applied, which is calculated using the following formula (IMF 2009):

$$Pcons^t = \frac{Pcur^t}{Pu^0}$$

where $Pcons^t$ shows export/import values in time $t$ expressed in constant prices, $Pcur^t$ shows export/import values in time $t$ expressed in current prices, $Pu^0$ is index of unit value in the base year $0$.

In order to provide comprehensive analysis, standard statistical methods such as mode, median, arithmetic mean and trends are used in this research.

## Research results

### Market oriented relative comparative advantage in export (MSXA) of Serbia on EU market

In the export of Serbian agro-food products to the EU market, relative comparative advantage is revealed at the level of four SITC divisions, namely: division 04 with the median *MSXA* value of 0.64, division 05 with a median value of 0.62, division 06, with the median value of 0.84 and division 08 with median value of 0.04 (*Table 1.*). In divisions 04, 05 and 06 relative comparative advantage in exports was observed throughout the period, with growth tendency in the export of cereals and cereal products, but declining trend of relative comparative advantage in the export of fruits and vegetables, as well as sugar and sugar confectioneries.

During the period, we can see the growth in the number of SITC products with revealed relative comparative advantage in exports whose share increases from 13.2% in 2004 to 15.7% in 2013. On the other hand, there is an increasing trend of SITC products for which

relative comparative advantage in export is not revealed with the lowest recorded share of 30.06% in 2005 and the highest share of 43.26% in 2013. Observed trends indicates that range of products that are being exported from Serbia to EU market increased but that further specialization in exports is necessary in order to improve the position of Serbia.

The importance of relative comparative advantage in the export of Serbia to the EU market, has been observed from the aspect of product life expectancy where positive *MSXA* value was observed in at least one year of the period (expressed in years). Overall, the average life expectancy of the product for which the relative comparative advantage in exports is revealed, was 5.15 years, while the share of products which had positive MSXA value at least in one year was 27.3%. Looking at the average life expectancy by divisions, it can be seen that there are certain products with relative comparative advantage on the EU market even within the divisions which have negative MSXA value.

**Table 1.** Market oriented relative comparative advantage in export of agro-food products of Serbia on EU market by SITC division (2004-2013) – application of *MSXA* index

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 11 | 12 | >0 (%) | <0 (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| '04 | -0.33 | -0.55 | -0.91 | -0.98 | **0.23** | **0.70** | **0.94** | -0.19 | **0.00** | **0.08** | -0.51 | -0.37 | 13.2 | 32.3 |
| '05 | -0.42 | -0.52 | -0.97 | -0.99 | **0.59** | **0.66** | **0.92** | -0.10 | -0.27 | -0.06 | -0.49 | -0.72 | 14.9 | 30.1 |
| '06 | -0.90 | -0.53 | -0.88 | -0.99 | **0.55** | **0.62** | **0.90** | -0.25 | -0.32 | -0.05 | -0.60 | -0.38 | 13.2 | 37.9 |
| '07 | -0.96 | -0.56 | -0.92 | -1.00 | **0.51** | **0.63** | **0.86** | -0.27 | **0.04** | -0.11 | -0.61 | -0.28 | 12.6 | 37.6 |
| '08 | -0.93 | -0.66 | -0.93 | -0.99 | **0.40** | **0.59** | **0.85** | -0.35 | -0.02 | -0.14 | -0.46 | -0.15 | 12.6 | 39.6 |
| '09 | -0.95 | -0.77 | -0.93 | -0.99 | **0.75** | **0.62** | **0.83** | -0.33 | **0.08** | -0.08 | -0.24 | **0.18** | 14.0 | 38.5 |
| '10 | -0.96 | -0.78 | -0.94 | -0.99 | **0.80** | **0.59** | **0.83** | -0.41 | **0.08** | -0.05 | -0.33 | **0.17** | 13.2 | 45.2 |
| '11 | -0.93 | -0.85 | -0.93 | -0.98 | **0.80** | **0.62** | **0.80** | -0.51 | **0.19** | -0.10 | -0.18 | **0.13** | 14.9 | 46.1 |
| '12 | -0.92 | -0.86 | -0.82 | -0.97 | **0.84** | **0.54** | **0.82** | -0.55 | **0.28** | -0.02 | -0.02 | **0.24** | 16.0 | 45.2 |
| '13 | -0.95 | -0.90 | -0.80 | -0.98 | **0.68** | **0.48** | **0.77** | -0.61 | **0.03** | **0.05** | -0.23 | **0.02** | 15.7 | 43.3 |
| *Me* | -0.93 | -0.72 | -0.92 | -0.99 | **0.64** | **0.62** | **0.84** | -0.34 | **0.04** | -0.06 | -0.39 | -0.06 | | |
| *Mo* | -0.83 | -0.70 | -0.90 | -0.99 | 0.62 | 0.61 | 0.85 | -0.36 | 0.01 | -0.05 | -0.37 | -0.12 | | |
| σ | 0.08 | 0.05 | 0.02 | 0.00 | 0.06 | 0.02 | 0.02 | 0.05 | 0.06 | 0.02 | 0.06 | 0.10 | | |
| *Average life expectancy of the product with the revealed relative comparative advantage in exports (MSXA>0)* | | | | | | | | | | | | | Σ | MSXA>0 (%) |
| | 2.0 | 5.7 | 2.0 | - | 4.4 | 6.0 | 4.6 | 4.8 | 4.0 | 5.3 | 5.7 | 6.2 | 5.15 | 27.2 |

*Source: Author's calculation based on EUROSTAT and SSO data*

Serbia's export to the EU market, is almost completely dominated by the export of primary agricultural products. Although Serbia has a relative comparative advantage in exporting to the EU market under four divisions, bearers of good results are based on a small number of export products, of which the most important are presented individually (*Table 2.*). Within the division 04, the most important export product was commercial maize where the *MSXA* values were at a high level, especially in the second half of the observed period that arise, as a direct consequence of the application of Interim Trade Agreement (ITA) (Official Gazette 83/2008) by new Member states. Namely, after EU accession in 2007, Romania started to become the most important trade partner of Serbia in the EU when it comes to agro-food

sector. The slightly lower *MSXA* value of SITC product 04490 in 2013, was a consequence of the reduced export value due to drought and export bans set by Serbian government in 2013. In fruit export, the relative market position of Serbia in the EU market recorded very good results especially when it comes to exports of frozen raspberries and other berries (05832), which is the most important export product of Serbia. Its relative comparative advantage in exports, Serbia maintained at the maximum level throughout the period with almost maximum *MSXA* values. In addition to these, a significant exports share was realized in sugar export (06129) thanks to the preferential export regime of EU which is limited to 180,000 tons per annum (Official Gazette 83/2008). Although the relative comparative advantage in the export of Serbia in the EU market is at high level, mild downward trend of *MSXA* values was observed. Having in mind that preferential regime for sugar export is limited by maximum quantity, increasing of quotas would definitely contribute to further strengthening of relative comparative advantage of Serbia in the EU market.

**Table 2.** Market oriented relative comparative advantage in export of most significant agro-food products of Serbia on EU market (2004-2013) – application of *MSXA* index

| SITC | % | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | M*e* |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 05832 | 12.4 | 1.00 | 1.00 | 1.00 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | *0.99* |
| 05839 | 3.8 | 0.97 | 0.97 | 0.96 | 0.97 | 0.96 | 0.96 | 0.97 | 0.97 | 0.96 | 0.95 | *0.96* |
| 08152 | 1.0 | 0.97 | 0.95 | 0.95 | 0.97 | 0.94 | 0.96 | 0.97 | 0.96 | 0.94 | 0.93 | *0.95* |
| 06129 | 11.8 | 0.98 | 0.97 | 0.97 | 0.96 | 0.95 | 0.94 | 0.94 | 0.93 | 0.93 | 0.92 | *0.95* |
| 04490 | 11.5 | 0.77 | 0.94 | 0.93 | 0.70 | 0.84 | 0.97 | 0.97 | 0.96 | 0.97 | 0.79 | *0.93* |
| 05995 | 1.2 | 0.88 | 0.91 | 0.90 | 0.86 | 0.81 | 0.77 | 0.89 | 0.91 | 0.87 | 0.86 | *0.87* |
| 04410 | 1.2 | 0.66 | 0.57 | 0.67 | 0.71 | 0.85 | 0.85 | 0.81 | 0.76 | 0.82 | 0.87 | *0.78* |
| 05458 | 0.6 | 0.92 | 0.90 | 0.88 | 0.83 | 0.73 | 0.82 | 0.72 | 0.72 | 0.23 | 0.32 | *0.78* |
| 05469 | 1.2 | 0.80 | 0.75 | 0.70 | 0.72 | 0.61 | 0.68 | 0.68 | 0.68 | 0.69 | 0.66 | *0.68* |
| 04120 | 2.9 | 0.17 | 0.53 | -0.79 | 0.73 | -0.86 | -0.36 | 0.79 | 0.70 | 0.73 | 0.89 | *0.62* |
| 12120 | 1.8 | 0.17 | -0.30 | 0.35 | 0.53 | 0.55 | 0.72 | 0.69 | 0.66 | 0.72 | 0.57 | *0.56* |

*Source: Author's calculation based on EUROSTAT and SSO data*

## Market-oriented relative level of import penetration (MSIA) of EU on Serbian market

In import of agro-food products from EU to Serbia, relatively low level of penetration was observed in most of the divisions with negative *MSIA* median values. In SITC divisions 06, 07, 09 and 12 MSIA median value is greater than 0, which indicates that the relative level of EU's penetration is high (*Table 3.*). In divisions 01, 02, 03, 04, 05 and 11 a relatively low level of penetration can be seen in all observed years. However, in all divisions, there is a noticeable increase in the *MSIA* values indicating an upward trend in the relative position of the EU in Serbia. In division 00, the *MSIA* value is negative in all observed years, except in the last two observed years with constant growth trend of the index value indicating a higher relative level of penetration of the product of the observed division's products on the Serbian market. On the other hand, in the division 08 *MSIA* values are negative in all years except in 2006 and 2013, which did not significantly affect the overall relative level

of penetration in the reporting period, with the median value of -0.03. Highest *MSIA* value is recorded in the division 09 with a value of 0.27, while the tendency of lowering the relative level of penetration of observed products groups is visible. Division 12 products in all observed years recorded a relatively high level of import penetration, but with visible tendency of re-growth of the index value in the second half of the period.

**Table 3.** Market oriented relative import penetration of agro-food products in Serbia from EU by SITC divisions (2004-2013) – application of *MSIA* index

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 11 | 12 | >0 (%) | <0 (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| '04 | -0.48 | -0.59 | -0.56 | -0.24 | -0.05 | -0.16 | 0.17 | 0.18 | 0.00 | 0.47 | -0.52 | 0.52 | 24.7 | 57.3 |
| '05 | -0.13 | -0.59 | -0.66 | -0.17 | -0.09 | -0.16 | 0.31 | 0.14 | 0.00 | 0.50 | -0.57 | 0.47 | 25.6 | 52.8 |
| '06 | -0.35 | -0.64 | -0.67 | -0.24 | -0.10 | -0.13 | 0.13 | 0.01 | 0.14 | 0.34 | -0.52 | 0.48 | 24.7 | 54.8 |
| '07 | -0.28 | -0.72 | -0.64 | -0.31 | -0.27 | -0.19 | -0.05 | 0.16 | -0.05 | 0.24 | -0.55 | 0.14 | 21.9 | 59.0 |
| '08 | -0.34 | -0.61 | -0.53 | -0.28 | -0.29 | -0.15 | -0.11 | 0.17 | -0.13 | 0.26 | -0.48 | 0.18 | 21.9 | 58.4 |
| '09 | -0.34 | -0.58 | -0.72 | -0.35 | -0.51 | -0.20 | -0.14 | -0.19 | -0.26 | 0.07 | -0.58 | 0.04 | 18.5 | 63.2 |
| '10 | -0.64 | -0.60 | -0.51 | -0.38 | -0.51 | -0.19 | -0.13 | -0.02 | -0.15 | 0.15 | -0.63 | 0.07 | 17.7 | 66.0 |
| '11 | -0.28 | -0.55 | -0.41 | -0.23 | -0.25 | -0.12 | -0.03 | 0.06 | -0.03 | 0.28 | -0.46 | 0.16 | 21.9 | 62.6 |
| '12 | 0.03 | -0.40 | -0.42 | -0.17 | -0.21 | -0.11 | 0.04 | 0.06 | -0.04 | 0.28 | -0.46 | 0.21 | 23.6 | 61.5 |
| '13 | 0.09 | -0.36 | -0.47 | -0.22 | -0.20 | -0.13 | 0.13 | 0.07 | 0.04 | 0.25 | -0.49 | 0.29 | 24.2 | 63.8 |
| Me | -0.31 | -0.59 | -0.54 | -0.24 | -0.23 | -0.15 | 0.01 | 0.07 | -0.03 | 0.27 | -0.52 | 0.20 | | |
| Mo | -0.27 | -0.56 | -0.56 | -0.26 | -0.25 | -0.15 | 0.03 | 0.06 | -0.05 | 0.28 | -0.53 | 0.26 | | |
| σ | 0.07 | 0.03 | 0.04 | 0.02 | 0.05 | 0.01 | 0.05 | 0.04 | 0.04 | 0.04 | 0.02 | 0.06 | | |
| *Average life expectancy of products with relatively high import penetration (MSIA>0)* | | | | | | | | | | | | | Σ | MSIA >0 (%) |
| | 5.6 | 4.0 | 2.9 | 7.6 | 4.4 | 5.1 | 5.3 | 5.6 | 4.3 | 7.1 | 2.0 | 6.1 | 5.23 | 42.9 |

*Source: Author's calculation based on EUROSTAT and SSO data*

In the structure of the observed SITC products, more than half are products in which the *MSIA* value is less than 0 indicating a relatively low level of import penetration of EU products with a tendency of increasing number of such products. In 2010, 2/3 of the imported products from the EU recorded a negative *MSIA* value. On the other hand, growing share of products with high level of import penetration in Serbia is observed in the second half of the period. The largest share of products with relatively high import penetration was recorded in the first three observed years.

Overall, the average life expectancy of the products with positive *MSIA* values is 5.23 years while the total share of products with at least one year with positive *MSIA* value reached 42.98%. Like in the export, it can be noted that there are products within the divisions with negative *MSIA* values that had relatively high level of import penetration of the EU to the Serbian market.

While Serbia has a relatively high comparative advantage in export to EU, on the other side it can be recognized that EU recorded relatively low level of import penetration. By analyzing most important import products from EU, we can see presence of products with

negative *MSIA* values, which indicates a relatively low level of penetration in the market of Serbia (*Table 4*). However, generally speaking, there is a growth tendency of *MSIA* values during the period in most import products from EU.

**Table 4.** Market oriented relative import penetration of most significant agro-food products in Serbia from EU (2004-2013) – application of *MSIA* index

| SITC | % | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | M*e* |
|------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 06196 | 1.3 | 0.91 | 0.92 | 0.95 | 0.96 | 0.96 | 0.96 | 0.92 | 0.94 | 0.95 | 0.96 | *0.95* |
| 09860 | 1.3 | 0.76 | 0.78 | 0.74 | 0.63 | 0.64 | 0.66 | 0.72 | 0.71 | 0.71 | 0.79 | *0.72* |
| 05771 | 3.4 | 0.42 | 0.68 | 0.68 | 0.67 | 0.70 | 0.71 | 0.69 | 0.75 | 0.67 | 0.66 | *0.68* |
| 12120 | 2.4 | 0.49 | 0.69 | 0.68 | 0.40 | 0.53 | -0.52 | 0.53 | 0.83 | 0.81 | 0.81 | *0.60* |
| 05712 | 2.3 | 0.38 | 0.24 | 0.54 | 0.57 | 0.56 | 0.54 | 0.57 | 0.57 | 0.57 | 0.49 | *0.55* |
| 09899 | 10.7 | 0.67 | 0.67 | 0.46 | 0.37 | 0.42 | 0.18 | 0.21 | 0.38 | 0.41 | 0.34 | *0.39* |
| 07330 | 3.5 | 0.54 | 0.26 | 0.21 | 0.24 | 0.25 | 0.18 | 0.22 | 0.22 | 0.17 | 0.16 | *0.22* |
| 07131 | 1.9 | 0.19 | 0.00 | -0.04 | 0.14 | 0.18 | 0.16 | 0.24 | 0.27 | 0.23 | 0.19 | *0.18* |
| 12220 | 5.6 | 0.54 | 0.43 | 0.48 | 0.13 | 0.16 | 0.20 | 0.09 | -0.17 | -0.38 | -0.32 | *0.15* |
| 01222 | 2.0 | -0.13 | -0.14 | -0.49 | -0.41 | -0.09 | -0.04 | -0.28 | -0.02 | 0.30 | 0.35 | *-0.11* |
| 04849 | 1.3 | 0.17 | -0.02 | -0.33 | -0.61 | -0.55 | -0.83 | -0.73 | -0.44 | -0.31 | -0.32 | *-0.38* |
| 06229 | 1.3 | -0.19 | -0.34 | -0.44 | -0.84 | -0.66 | -0.27 | -0.50 | -0.36 | -0.38 | -0.42 | *-0.40* |
| 11102 | 1.3 | -0.42 | -0.44 | -0.47 | -0.43 | -0.25 | -0.47 | -0.41 | -0.44 | -0.32 | -0.26 | *-0.43* |

*Source: Author's calculation based on EUROSTAT and SSO data*

## Market oriented relative comparative trade advantage (MORTA) in agro-food trade between Serbia and EU

High *MSXA* values, as well as the relatively low *MSIA* value in agro-food trade between Serbia and EU determine *MORTA* value which is an indicator of the relative level of comparative trade advantage. As one can see, in trade between Serbia and EU, relative comparative trade advantage lays down on Serbia within the divisions 04, 05, 06, 08 and 11 which are the divisions in which Serbia has a significant export results (*Table 5.*). On the other hand, negative *MORTA* values indicate that relative comparative trade advantage is not revealed.

The share of products with revealed comparative trade advantage of Serbia in trade with the EU, fluctuate over time from the lowest recorded value of 19.38% in 2004, up to a maximum recorded value of 26.69% in 2010. Overall, there is a noticeable increase in the number of products where relative comparative trade advantage is revealed on the side of Serbia in trade with EU. Also, it can be noticed that the share of products with positive *MORTA* values is greater than the share of products with positive *MSXA* values which indicates that Serbia performed better results in mutual trade as a result of lower level of import penetration from EU.

The average life expectancy of products with revealed relative comparative trade advantage is 4.75 years in the observed ten-year period. Below average life expectancy is revealed only in division 06 which amounts 3.91 years. The longest life expectancy of 7 years was noticed in SITC division 00 where negative *MORTA* values are present in all observed

years except in 2004. Although relative comparative trade advantage at the level of divisions is not revealed, it is evident that there are products within divisions where relative comparative trade advantage is revealed.

**Table 5.** Market oriented relative comparative trade advantages of Serbia in trade of agro-food products between Serbia and EU by SITC divisions (2004-2013) – application of *MORTA* index

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 11 | 12 | >0 (%) | <0 (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| '04 | 0.15 | 0.04 | -0.35 | -0.74 | 0.28 | 0.86 | 0.76 | -0.37 | 0.00 | -0.39 | 0.01 | -0.89 | 19.4 | 64.3 |
| '05 | -0.29 | 0.07 | -0.31 | -0.83 | 0.69 | 0.82 | 0.61 | -0.23 | -0.28 | -0.56 | 0.08 | -1.20 | 20.2 | 61.2 |
| '06 | -0.55 | 0.11 | -0.20 | -0.75 | 0.64 | 0.74 | 0.76 | -0.26 | -0.46 | -0.39 | -0.08 | -0.86 | 21.1 | 61.8 |
| '07 | -0.68 | 0.16 | -0.28 | -0.69 | 0.78 | 0.83 | 0.92 | -0.43 | 0.10 | -0.34 | -0.05 | -0.43 | 21.1 | 62.6 |
| '08 | -0.59 | -0.05 | -0.40 | -0.71 | 0.68 | 0.74 | 0.95 | -0.52 | 0.11 | -0.40 | 0.02 | -0.33 | 22.2 | 61.0 |
| '09 | -0.61 | -0.19 | -0.21 | -0.64 | 1.26 | 0.82 | 0.97 | -0.15 | 0.34 | -0.15 | 0.35 | 0.14 | 24.4 | 60.1 |
| '10 | -0.32 | -0.18 | -0.42 | -0.60 | 1.31 | 0.78 | 0.96 | -0.38 | 0.24 | -0.20 | 0.30 | 0.10 | 26.7 | 61.0 |
| '11 | -0.65 | -0.29 | -0.53 | -0.75 | 1.05 | 0.74 | 0.83 | -0.56 | 0.22 | -0.38 | 0.28 | -0.03 | 26.1 | 62.1 |
| '12 | -0.95 | -0.47 | -0.41 | -0.80 | 1.05 | 0.65 | 0.77 | -0.61 | 0.32 | -0.30 | 0.45 | 0.02 | 24.7 | 63.5 |
| '13 | -1.04 | -0.54 | -0.33 | -0.75 | 0.89 | 0.61 | 0.63 | -0.68 | -0.01 | -0.20 | 0.26 | -0.26 | 24.7 | 66.0 |
| *Me* | -0.60 | -0.11 | -0.34 | -0.74 | 0.83 | 0.76 | 0.80 | -0.41 | 0.10 | -0.36 | 0.17 | -0.30 | | |
| *Mo* | -0.55 | -0.13 | -0.34 | -0.73 | 0.86 | 0.76 | 0.82 | -0.42 | 0.06 | -0.33 | 0.16 | -0.37 | | |
| σ | 0.11 | 0.08 | 0.03 | 0.02 | 0.10 | 0.03 | 0.04 | 0.06 | 0.08 | 0.04 | 0.06 | 0.15 | | |
| *Average life expectancy of products with revealed comparative trade advantage (MORTA>0)* | | | | | | | | | | | | | Σ | MORTA>0 (%) |
| | 7.0 | 3.5 | 1.9 | 2.0 | 6.0 | 5.9 | 3.9 | 2.9 | 5.2 | 4.4 | 5.3 | 3.0 | 4.75 | 48.6 |

*Source: Author's calculation based on EUROSTAT and SSO data*

Analyzing selected agro-food products, it can be seen that Serbia has achieved a relative comparative trade advantage for products where export results are strong on the EU market (*Table 6.*). Relatively low median *MORTA* value in trade of SITC 05832, 04410 and 05995 indicates that their relative significance in import to Serbia from EU is also present. On the other hand, products with a relatively high level of penetration in Serbia, consequently contributes that EU's relative comparative trade advantages is revealed in trade with Serbia. In the case of SITC product 09860, despite the high *MSIA* value, relative comparative trade advantage is revealed, bearing in mind that the relative importance of Serbia's export to the EU market is higher. In the case of SITC 01222 comparative trade advantage is not revealed despite the fact that in most of the period, the *MSIA* value is negative, which is a consequence of low relative level of export penetration of Serbia.

**Table 6.** Market oriented revealed comparative trade advantage of most significant agro-food products in trade between Serbia and EU (2004-2013) – application of *MORTA* index

| SITC | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | M*e* |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 06196 | -1.91 | -1.92 | -1.95 | -1.96 | -1.96 | -1.96 | -1.91 | -1.74 | -1.89 | -1.96 | *-1.94* |
| 09860 | 0.08 | 0.00 | 0.03 | 0.20 | 0.16 | 0.17 | 0.13 | 0.10 | 0.09 | -0.59 | *0.10* |
| 05711 | -1.42 | -1.68 | -1.67 | -1.67 | -1.69 | -1.69 | -1.69 | -1.75 | -1.64 | -1.65 | *-1.67* |
| 12120 | -0.31 | -0.99 | -0.32 | 0.13 | 0.02 | 1.24 | 0.16 | -0.17 | -0.08 | -0.24 | *-0.12* |
| 05712 | -1.38 | -1.23 | -1.52 | -1.57 | -1.56 | -1.49 | -1.56 | -1.51 | -1.51 | -1.44 | *-1.51* |
| 09899 | -0.45 | -0.58 | -0.41 | -0.44 | -0.48 | -0.22 | -0.30 | -0.43 | -0.30 | -0.03 | *-0.42* |
| 07330 | -0.65 | -0.20 | -0.17 | -0.46 | -0.57 | -0.47 | -0.57 | -0.58 | -0.55 | -0.67 | *-0.56* |
| 07131 | -1.19 | -1.00 | -0.96 | -1.14 | -1.06 | -1.14 | -1.12 | -1.23 | -1.10 | -1.16 | *-1.13* |
| 12220 | -1.54 | -1.42 | -1.45 | -1.13 | -1.16 | -0.77 | -0.88 | -0.28 | -0.43 | -0.48 | *-1.00* |
| 01222 | -0.87 | -0.86 | -0.51 | -0.59 | -0.91 | -0.96 | -0.72 | -0.98 | -1.30 | -1.35 | *-0.89* |
| 04849 | 0.08 | 0.17 | 0.01 | 0.26 | 0.29 | 0.43 | 0.45 | 0.18 | 0.09 | -0.08 | *0.18* |
| 06229 | -0.26 | 0.13 | 0.13 | 0.63 | 0.32 | -0.02 | 0.13 | -0.01 | 0.03 | -0.14 | *0.08* |
| 11102 | -0.41 | -0.23 | -0.25 | -0.07 | -0.28 | 0.25 | 0.31 | 0.48 | 0.63 | 0.51 | *0.09* |
| 05832 | 0.47 | 0.42 | 0.33 | 0.30 | 0.32 | 0.33 | 0.32 | 0.37 | 0.22 | 0.24 | *0.33* |
| 05839 | 1.15 | 1.40 | 1.33 | 1.21 | 0.98 | 0.74 | 1.13 | 0.80 | 0.66 | 0.60 | *1.06* |
| 08152 | 1.83 | 1.95 | 1.91 | 1.87 | 1.89 | 1.87 | 1.93 | 1.93 | 1.75 | 1.84 | *1.88* |
| 06129 | 0.88 | 0.65 | 1.15 | 1.84 | 1.88 | 1.93 | 1.93 | 1.78 | 1.93 | 1.91 | *1.86* |
| 04490 | 1.28 | 1.92 | 1.91 | 1.69 | 1.82 | 1.94 | 1.95 | 1.95 | 1.81 | 1.61 | *1.87* |
| 05995 | 0.49 | 0.54 | 0.59 | 0.76 | 0.60 | 0.65 | 0.96 | 0.85 | 0.87 | 0.60 | *0.63* |
| 04410 | 0.43 | 0.53 | 0.42 | 0.69 | 0.49 | 0.30 | 1.03 | 0.22 | 0.13 | 0.18 | *0.43* |
| 05458 | 1.49 | 1.72 | 1.75 | 1.82 | 1.70 | 1.78 | 1.67 | 1.71 | 1.19 | 1.29 | *1.71* |
| 05469 | 1.49 | 1.43 | 1.24 | 1.37 | 1.18 | 1.50 | 1.42 | 1.28 | 1.16 | 1.09 | *1.33* |
| 04120 | 1.15 | 1.53 | 0.21 | 1.72 | 0.13 | 0.64 | 1.78 | 1.66 | 1.66 | 1.86 | *1.59* |

*Source: Author's calculation based on EUROSTAT and SSO data*

## Conclusion

Trade liberalization between Serbia and the EU through SAA, undoubtedly contributed to the enhancement of mutual trade relations in trade agro-food products, which is manifested, above all, by trade value growth. Considering all SITC agro-food products it can be seen that during the ITA implementation, total number of traded products increased with a simultaneous increase in the share of products in which relative comparative trade advantage is revealed with significantly wider range of products imported from the EU, in relation to the range of products which are exported to EU market. However, the wide possibilities of liberalization of mutual trade relations have not been exploited fully, which leaves room for further improvement of trade relations.

Although Serbia managed to increase share of products with revealed relative comparative advantage of export to EU during ITA implementation, in the same period share of products with relatively high penetration from EU market also increased. Overall, Serbia managed to increase share of products with revealed relative comparative trade advantage in trade with the EU in relation to the period before the ITA implementation which is a clear indication

that the liberalization of trade relations with the EU has not led to distortion of Serbian comparative advantages. On the contrary, presented results of the most important traded products showed that both Serbia and the EU are improving their trade relations primarily on complementary products. However, there are products where relative comparative advantage is weakening over time on both sides, which requires observation and possible corrections of agrarian policy makers, especially in Serbia, bearing in mind the importance of the EU market.

*MORTA* concept presented in this paper can be considered as an appropriate alternative model of revealed comparative advantage which can be used on any country and on any product industry.

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# TRŽIŠNO ORIJENTISANI PRISTUP UOČENE KOMPARATIVNE PREDNOSTI U MEĐUNARODNOJ TRGOVINI

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## Rezime

*Tržišno orijentisana relativna komparativna prendost (MORTA) predstavlja nov pristup široko prihvaćenog modela uočene komparativne prednosti (RCA) koji je prezentovan po prvi put u ovom radu. Primenjeni model je korišćen u analizi agro-industrijske trgovine u cilju uočavanja nivoa promena relativne komparativne prednosti između EU i Srbije pre i tokom implementacije Sporazuma o stabilizaciji i pridruživanju sa EU (2004-2013) na bazi podataka Eurostat-a i podataka Republičkog zavoda za statistiku Republike Srbije. Analiza teži da prikaže da li su Srbija i EU, svaka na svojoj strani, bile sposobne da iskoriste prednosti trgovinske liberalizacije, posebno u relativnom smislu. Rezultati istraživanja pokazuju da Srbija, u smislu liberalizacije trgovinskih odnosa sa EU, uspeva da obezbedi rast proizvoda sa relativnom komparativnom trgovinskom prednošću, dok sa druge strane EU ne uspeva da u većoj meri koristi preferencijalni status u trgovini sa Srbijom.*

***Ključne reči:*** *tržišno orijentisana uočena komparativna prednost, agro-industrijska trgovina, EU, Srbija*

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# A CRITICAL REVIEW OF LEGAL FRAMEWORK AS A FACTOR OF COOPS DEVELOPMENT - CASE OF SERBIA

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## Abstract

*Contemporary cooperative movement must rest on the original cooperative principles that were confirmed and modernized by the Congress of International Co-Operative Alliance held in Manchester in 1995. Development of coops legislative framework in Serbia has a long history and presently the matter of cooperatives is governed by the federal Law on Cooperatives adopted in 1996. The text analyzes the extent to which a legislative framework can be an incentive for and/or impediment to cooperatives' operation in Serbia, and what sort of results can be expected from a modernized and improved legal framework. Interview of key players in the coop sector was one of the research methods. Other methods include historical, comparative analysis and case study. The paper includes four parts: a) historical and legal background of development of coops in Serbia; b) legislative framework; c) successful case study and d) framework for further development. The paper also analyses cooperatives within the environment of social enterprises and evaluates their role in the social inclusion process.*

***Keywords:*** *coops, legal framework, ownership, agricultural household, individual producers*

**JEL:** *P32, K39, Q13*

## Historical and Legal Background of the Cooperatives Development in Serbia

In the course of World War Two, due to the economic crisis and war devastations most cooperatives and cooperative associations in Serbia (and in ex-Yugoslavia) ceased to

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operate. A phase of recovery of the cooperative movement in the post-war period then followed. Four years after, in 1949, a new law – Basic Law on Farm Cooperatives was passed (Official Gazette of the Federal Republic of Yugoslavia, June 6, 1949), which defined the cooperative as an economic organization where working age peasantry get together in order to improve the agricultural production, raise their living standard and build socialism in the country.

Apart from providing the members with intermediates for selling their produce, the cooperatives were also playing an educational role. They organized competitions of farmers and similar activities which contributed to the development of agriculture and the village. Since the state authorities believed that agriculture and village promotion would be most efficiently accomplished through the cooperatives, they were given the monopoly of its own kind over the purchase of agricultural commodities from peasants, purchase of agricultural machinery, etc. Privileged position held by the cooperatives in relation to other entities in agriculture, and economic and social gains and interests that cooperative members accomplished through their respective cooperatives, played a strong role in massifying their membership and in strengthening the economic position of the cooperatives.

These processes were taking place in the circumstances of limited right to private ownership (maximum 10 ha of land holding per household, impossibility to purchase machinery, etc.). Therefore, concentration of cooperative property represented a way for cooperative members to also introduce new technologies, apply up-to-date agro-technical measures and introduce new knowledge to their own holdings.

The 1953 Constitutional law and further economic reforms in 1965 weakened substantially the position of the co-ops. Their property became "nobody's" and "everybody's" socially-owned property, while their monopoly diminished enabling farmers to work directly with other economic operators. The labour economic principle publicly stated by the reform has thus left aside the cooperatives with their enormous labour force and machinery. It was one of the most unfavorable periods of the cooperative system in Serbia. The property of former cooperatives is even today subject of settlement in numerous courts.

The expansion of cooperative movement was halted by the changes that the Law on Associated Labour (Official Gazette of the SFRY, Issue No 53/764, December3, 1976) brought along (between 1972 and 1976), when cooperatives got drowned in state-owned, and/or "socially-owned" enterprises. Under the name of basic organizations of contract farmers, cooperatives became parts of agricultural enterprises and agro-industrial complexes, thus losing their legal and economic subjectivity. Consequently, in the period from the 70s until 90s there were no farm cooperatives as independent legal entities. At the time when cooperatives were transformed into Basic Organizations of Contract Farmers, they held in addition to about 200,000 ha of land, 10 slaughter houses, 6 dairy plants, 19 flour mills, 2 flour processing and pasta factories, 8 fruit vegetables and grape processing factories, 11 fodder mixing plants, 4 hemp spinning

mills, 17 building plants, 27 installations for trading in industrial commodities, etc. All ownership rights to the above listed property (as well as to non-mentioned working assets) were transferred to the social sector by the drowning of the cooperatives in socially-owned agricultural enterprises and agro-industrial complexes.

Amendments of the 1988 SFRY Constitution reintroduced the cooperative property as an equal form of ownership, while a new Law on Cooperatives was passed in 1990 (Official Gazette of the Federal Republic of Yugoslavia, No. 67/93, 46/95 and 101/05). The intention to return the cooperatives' property back to co-ops failed due to inefficient legal procedures.

These issues were additionally complicated by the law adopted in 1992, which in the instructions for the mode and procedure for establishing and recording the agricultural land in state and social ownership neither mentions the cooperative property nor land in cooperative ownership.Although the new Law on Cooperatives of 1996 attempted again to force the return of property to co-ops, it never happened and the damage appeared to be unrecoverable.

Currentlyvalid Constitution from 2006 (National Assembly of the Republic of Serbia, 2006, Constitution of the Republic of Serbia, RS Official Gazette, No. 98/2006) recognizes three forms of ownership, public (state), private and cooperative. Takinginto account the fact that social ownership exists no longer, a question arises as to why the courts are further doing injustice to the cooperative movement and why are booking the disputable property as state-owned? Or, why are they protracting disputes infinitely?

In parallel with the transformation of Basic Organizations Of Contract Farmers into cooperatives, since early 90s has started the forming of new cooperatives by farmers who see in the cooperative organization a possibility for accomplishment of their economic interests. Joint characteristics of the transformed and newly-formed cooperatives involve (save for the fact that they operate in conformity with identical legal provisions) the lack of capital, lack of fixed and working assets, poor personnel structure, etc.

Contemporary cooperative movement must rest on the original cooperative principles that were confirmed and modernized by the Congress of International Co-Operative Alliance held in Manchester in 1995(Statementon Co-operative Identity, General Assembly of the ICA, Manchester, 1995). Farmers' cooperatives are the only right and correct mode of organizing the farmers in organizations without which the existence of the village as such is in question. Preservation of the cooperative movement and improvement of its activity and operation necessarily requires stopping the fall in agricultural production, which is achievable by a more efficient implementation of economic and agrarian policy measures. Such measures have to be created by representatives of the cooperatives as the keyorganizational segment of farmers in Serbia. Adequate implementation of the agrarian policy implies that the incentives provided by the government for agricultural development reach true beneficiaries – primary farmers – cooperative members. Also, small-sized farmers have to be better protected by adequate measures, such as

cooperative internalization of critical transactions, both in the area of supply and the area of sale of their products (Valentinov, 2007).

The text below analyzes the extent to which a legislative framework can be an incentive for and/or impediment to cooperatives' operation in Serbia, and what sort of results can be expected from a modernized and improved legal framework.

## Methodology and data sources

This paper continues the research regarding the historical development, role and the impact of the coops' movement on the development of the agriculture and rural economy in Serbia, from the emergence of the first coop until now (Chroneos Krasavac, Petkovic, 2015). Several influential factors were revealed through the research process, among which, the legal framework appeared to be the most important. The paper is based on different data sources. The first group includes three types of documents, i.e. academic papers, all legal acts covering this field in Serbia from the beginning of coop movement and finally, official documents and reports of EU and the other international organizations. The other group of data sources is the empirical data.

The empirical data were collected through structural interviews of key stakeholders involved in cooperative business in Serbia. There were six sessions involving three researchers in discussion process based on the list of questions prepared in advance, targeted to the main coop development issues. The content of the answers and responses collected through this process were analyzed in order to extract the key factors that shaped the development process of the coops in Serbia. These findings were subject of the comparative analysis with the legal frameworks of more advanced coop environments and economies, particularly EU ones. Derived conclusions were, once again, verified on successful case study of private company whose business model is based on the basic principles of cooperatives.

## Legal framework as a factor of coops developmentin Serbia

Presently, the matter of cooperatives is governed by the federal Law on Cooperatives adopted in 1996 ("FRY Official Gazette", numbers 41/96, 12/98), and the Law on Cooperatives from 1990 ("Official Gazette of the Republic of Serbia", numbers 57/89, 67/93, 46/95 and 101/05). The Government of the Republic of Serbia, during several of its recent terms of office, has been engaged in drafting a new Law on Cooperatives. Morethan 8 different versions have been prepared, but a new Law has not been adopted yet.

Some of the shortcomings regarding the legal framework as a factor of coops development in Serbia are identified as such:

**The first difficulty one encounters is the legal dualism** because social relations in the field of cooperatives and cooperative movement are currently governed by two above mentioned laws, which have also been several times amended. In such a situation,

certain legal norms overlap, causing non-uniform application, different interpretations and absolute incompliance with the contemporary socio-economic circumstances. Therefore, the need for adopting a new law is more than evident because the cooperatives and the cooperative movement in the Republic of Serbia are exposed to multiple difficulties.

**The second shortcoming manifests in the obsoleteness and non-functionality of the legal solutions** adopted in the circumstances of essentially different economic, social and political circumstances. It is also necessary to take into account the different legal and constitutional system of federative state order with a two-level legislative power. Also, there is a need for harmonizing the domestic regulations with the regulations and legal acts of the European Union (Common market organization directive (EU) 1308/2013 of the European Parliament) in the area of cooperatives and cooperative movement. The need for these changes also arises from the necessity to proceed to the reform of domestic cooperatives and of the cooperative movement. The goal is, following the example of the developed countries, to rehabilitate the significance of cooperatives and of the cooperative movement, and create the conditions for them to become an important and dynamic factor of economic development. Expectation is to enable, through cooperatives, settlement of the accumulated economic and social problems, which is relevant in the current stage of implementation of the transition of the Republic of Serbia's socio-economic and legal system. This is the reason why the countries members of the International Co-Operative Alliance (ICA) have been given an instruction and/or recommendation to proceed to the reforms of the cooperative-related legislation. Intention is to create an ambiance for enhancing the market and entrepreneurial function in the operation of cooperatives. This can be achieved by full harmonization of domestic legislation with applicable European standards rather than by partial amendments of the existing laws.

**Unresolved property rights relations represent the third and the most pronounced shortcoming** which is a key barrier to the development of the cooperative movement. Legal status of cooperatives' and cooperative associations' property has been recorded as socially-owned which disenables the cooperatives, *inter alia*, to use this property as an instrument of security for a bank loan repayment. Also, unsettled property rights relations lead to problems in the process of privatization that had to take place. The issue of disposing of cooperative property has partly blocked further development of cooperatives. Recorded court disputes conducted for restitution of the cooperative property show the number of 186 requests on the basis of which are claimed about 39,000 ha of arable land, 800 ha of ponds and over 70,000 m2 of storage facilities, business premises and housing space. Until 2011, in the court proceedings were decided less than 4% of filed requests, on the grounds of which was returned about 1,500 ha of land and about 3,000 $m^2$ of facilities.

**The fourth problem is the absence of a stimulating effect of legal regulations** on the management transformation of cooperatives and on the strengthening of its market functions, as a must in contemporary circumstances. Further, a need arises for legal

recognition and a higher level of regulation of the cooperative sector's autonomy within the category of economic operators. That will create a legal basis for enactment of appropriate incentives and facilities in separate laws.

**The fifth problem is the inefficiency of the legal institutes of applicable laws**, principally in terms of the exercise of public authorizations entrusted to cooperative unions. Cooperative unions have by these authorizations got the right to pass general rules that regulate application of the cooperative principles and other issues relevant for operation of the cooperatives linked by those unions. Further, unions also adopt the rules which set forth the conditions that have to be observed by cooperative unions and auditors who do the cooperative audit, the contents of audit reports, and other issues relevant for cooperative audit. These legal acts represent the by-laws for enforcement of the laws that govern operation of the cooperative. As cooperative unions are authorized for passing the mentioned acts, and for their enforcement as well, without having been envisaged any efficient supervision over their operation by a competent government authority, a series of irregularities and deformations occurred in the operation of cooperatives and cooperative unions, particularly in terms of conduct of the cooperative audit. A need arises, therefore, for legal regulation of the cooperative audit, which would imply definition of the conditions necessary for getting licensed for performing cooperative audit, for issuance and revocation of the license, contents and mode of keeping a directory of cooperative auditors, mode of performing the cooperative audit, and supervision over the work of cooperative auditors.

**The sixth problem manifests in the fact that the Law does not recognize and, accordingly, does not regulate special cooperative forms.** Such are, for example, social cooperatives, whose mission is to settle some social issues. However, the unregulated status of these cooperatives makes more difficult their origin and development (Šunderić, 2008). In connection with this concrete issue there have been numerous dilemmas with regard to a cooperative forming and other special forms of cooperatives, such as "women's cooperatives", with a special focus on the creation of an economic ambiance in the countryside in which women would be willing to stay and have employment ensured (     Mijatović et al., 2012).   Improvement of the law in this area would, at the same time, create a favourable climate for getting recognition for the last established – the seventh principle of cooperative movement which relates to the care for community (Serbian Cooperative Union, 2012).

From all of the above listed issues, also arises the fact that the bulk of agricultural and other producers ("creators of new values") in Republic of Serbia are neither sufficiently organized nor protected, nowadays. This is the reason for the need of having a better organization, expansion and promotion of cooperatives forms in doing business. Moreover, a problem is also that a large portion of expert circles and the general public unjustly regard the cooperative as an obsolete and anachronous form of operation without further perspective (Gulan, 2013).

The lack of a contemporary legal framework is in most cases an impediment to

a successful cooperative movement. Below in the text,we are presenting the case of successful private organization in the area of primary agricultural production. Substantial part of their success stems from mutually beneficial cooperation with the existing coops in the region. The purpose of those private organizations is to fill the gap originated by distortion of the coop structure, presented in the previous text. There are different answers in different national economies, but also in different epochs of the development to the dilemma: "cooperative or private initiative". However, the international experiences from developed and well-structured agricultural' countries, demonstrate the complementarity of private and coop organizations regarding the specialization in performing different tasks in supply chain of primary agricultural products. Having that in mind, the presentation of the case study of private organization "Agrogrnja" is followed in the text by the latestinitiativein the development ofthe cooperatives'legal framework (Draft Law on Cooperatives, 2015).

## Business Case of the Successful Private Organization "Agrogrnja"

Private company "Agrogrnja" d.o.o. was incorporated in 1996 inPivnice, a place in the Province of Vojvodina, Republic of Serbia. The Company developed from a small family-run production of fodder, and has been registering a permanent growth which is accelerating. Thus, the 2009 turnover was EUR 7.9 million with 32 employees. In 2013, the turnover more than doubled and was at the level of EUR 18.8 million with 74 employees.

**Basic activity of the company** includes organization of primary agricultural production, purchase and sale of agricultural commodities, as well as service providing (drying, etc.) and exports and imports. The company is among the biggest in the segment of contracting and organizing primary agricultural production. It is organizing production on 6,000 ha, and purchase at 22 buying stations. The company is trading in commercial goods, primarily cereals (except rice) and oil plants. Among the key internal factors of the success of this company are also the professionalization of management and loyalty on the part of cooperative members.

**Association** represents one of the key factors of success of this type of companies. "Agrogrnja"d.o.o. is operating within the Global Union association which also includes the "Business Park" BačkiPetrovac, "Danube Agro Logistics" and other companies. Further, the company is a member of "VojvodinaAgrar" association. The head-office of this probably one of Vojvodina's most important agricultural associations is in Bečej. The association has 26 members with more than 25,000 contract farmers. All members are organizers of production, and a few of them also have their own production. "Agrogrnja", d.o.o. is one of the leading members of the association and is investing efforts and advocating further growth (the goal is 150,000 ha) and an even stronger integration of the members. As of recently, "Agrogrnja" d.o.o. has also become a member of the association of NonGMO producers of soya, "DonauSoja", having its head office in Vienna, and is the only member, among 130 other members, coming from Serbia.

**Professional management** is also an important factor of success of the company. It is a medium-sized enterprise with modern organization and a defined mission and vision of development. Business processes are covered by ERP software. All buying points and all services in the enterprise are directly linked, and processes are automated. Organization is formalized and based on systematization and description of jobs. All operation functions are functioning, including HR and controlling. The company has a development strategy based on strategic analyses and monitoring of the world food markets through technical services of the company and also via specialized consulting firms. The development strategy also envisages development of a new loading capacity on the Danube, on the Beočin location, the goal being to optimize the logistics costs and raise the company performance. The location was purchased from the cement plant "La Farge" which is planning to develop its loading platform in the same place. This will be an important loading place, if compared with the already existing capacities in Bogojevo and Pančevo.

"Agrogrnja" d.o.o. is precise and specific in defining its position in the chain of supply of primary agricultural commodities. The chain consists of five levels and participants on each of them.

Level I     producers of primary products – agricultural households;

Level II organizers of production of first order – cooperatives and enterprises with 1 buying station;

Level III organizers of production of higher order – enterprises and cooperatives with several buying stations;

Level IV a) processing industry (processors);

b) exporters;

Level V Multinational Trade Companies (MNC).

This chain of supply has several branches on each of the listed levels. For examples, processors are at the beginning of their chain of supply which further extends to food industry and marketing channels of food products. However, further elaboration of the channels is not necessary for understanding how the basic chain of supply functions. The key for efficient functioning of the chain of primary agricultural products supply in Vojvodina is almost the strict division of functions between the levels. There have been, and will also probably be in the future, the attempts by participants from different levels of this channel to take over the functions of other participants. Up to now, all such attempts have failed to a larger or smaller extent. Sunflower processors were trying to organize the primary production and purchase, but have desisted. The reason is a fragmented holding and the need to concentrate quantities of a large number of small producers on a broader space. Holdings in Europe are much larger and it is possible for a processor to organize the purchase within a circle of 200-400 km with its own logistics and with the logistics of large farmers. In the United States, processors even

have in their ownership the companies-organizers of the production. However, arable surfaces are incomparably larger. In Serbia, for the time being, concentration of the production of small producers is done by the participants on the second and third level of the chain of supply (USAID, 2008).

**Loyalty of contract farmers** represents, perhaps, the most important factor of business success for organizers of agricultural production. Unlike loyalty strategies on the market of final goods and services, the goal in primary agricultural production is to ensure loyalty of primary producers-contract farmers. "Agrogrnja" d.o.o. has for such needs even introduced the loyalty cards serving for identification of contract farmers in several places – contact points. This "benefit club" of its own kind ensures for contract farmers the benefits at the points where they spend the major part of their earned money, raising in this way the value of their wage. The most important advantages for the club members include: a) rebates and more favourable purchase price of the machinery; b) discounts at the time of contracting insurance; c) more favourable terms and conditions with banks; d) discounts provided by tourist agencies; e) benefits when shopping in the local chain of supermarkets. Contract farmer acquires these benefits after three years of regular settlement of the contractual obligation vis-à-vis the enterprise. In this way, the organizer of agricultural production upon contractual bases partly performs the functions that cooperative members would otherwise expect from their respective cooperatives.

**Stable relationships on the market and association** are an important external factor of success. **Purchase prices** are relatively uniform. In Serbia, in Vojvodina in particular, labour division between the participants in the channel has stabilized and is functioning. Each sugar processing plant or oil factory easily provides for the inputs it needs from the buying agents at the same price. The prices are essentially dictated by the world market through MNC. It sounds paradoxical, but the price depends more on the world price than on the season on local crops. This explains the view that sporadic local protests of farmers are oriented to regulation of the government subsidies rather than to product market prices. However, this view cannot be fully accepted because the awareness of the need to put together and concentrate small producers has been rising. An argument can be heard that business association "VojvodinaAgrar" (the member of which is the CF Gospodjinci) is a highly valuable factor underlying the stable functioning of the chain of supply in whose scheme it is invisible. This association acts as a defender of producers' interests against large processors. It manages, for example, to achieve with the largest soya processor a share in the supply of about 40% and, accordingly, a much more equal treatment in negotiations. It seems that spontaneous market flows had regulated the imperfections of the market by concentrating both the supply and the demand before the inefficient state authorities managed to perceive the problem.

**Republic authorities in charge of market regulation are poorly organized.** The share of the Republic Directorate for Commodities Reserves is 5-10% in the total turnover of the products under review. The government is (not) an essential active participant on the market. The problem is that government authorities are working without precise

data: there are no exact data even about the sown surfaces, or about yield estimates, etc. Precise estimates of other countries, big producers (the United States, and the like) and information coming from the world commodity exchanges have a much stronger influence on the market. The Agricultural Produce Exchange of Novi Sad has marginal importance for the market of commercial goods. It is believed that "the best thing for all market participants is that the Government does not interfere", except with regard to elimination of the legal impediments that it has been creating through history.

*Comparison of various forms of organizations for primary agricultural production*

**The analysis of our business case** shows great similarities between a cooperative and a private company in performing the same work. Key factors of success are identical for them: professionalization of management, loyalty of producers and joining together in business associations. The only essential difference between a cooperative and a private company lies in the nature of ownership and the speed of decision-making.

It is also suggested that clusters and associations of farmers are a better form of organization than cooperatives. Some of their advantages are as follows (Iliopoulos, 2013):

a) unification of all purchases within a cluster;

b) basic driver of all activities – interest;

c) management – according to economic strength, clear, efficient and unambiguous;

d) production is concentrated – even large producers have a need to join together and associations are a true form for that.

Nevertheless, it is likely that at least in the medium run private companies, cooperatives and farmers' associations will continue to perform their activities in parallel. In the cases where cooperatives will maintain the trust of their members and contract farmers, their functioning and even expansion will, perhaps, continue. In the cases where they will fail to build good quality relations, private business will develop as a more aggressive and a more resistant form of functioning. A question arises here concerning the national culture and the relationship between individualism and collectivism. According to original researches of national cultures, collectivism in the former Yugoslavia was far more accepted than in other European countries and the United States (Hofstede, 2001). This implies that slight inclination to cooperative farming can be expected. This further leads to an analysis of the attitude towards management and its professionalization. Further development of cooperatives requires more professional management, clear relations, but also less expectation from the organization to jump in to help. Cooperative members, much more oriented to collectivism, express solidarity more readily (Janićijević, 2008), although such attitude can sometimes endanger the cooperative as such.

The experience from the business case shows that in spite of the confusion which is present in legal regulations, it is possible to do business successfully as a primary

agricultural producer both in private and in cooperative ownership. It goes without saying, however, that without the improvement of the legal framework survival of the cooperatives in Serbia will in the long run be called into question. It is possible to quote several reasons that may jeopardize further development of cooperatives. The process of concentration has a strong impact on primary agricultural production causing disappearance of small "players" from the stage. The cooperatives not having a favourable legal framework for the raising and placing of their assets, of for borrowing, are losing the race with the mentioned concentration processes in comparison with private enterprises. Further, the process of globalization has a destructive effect on ethnic links that sporadically used to be crucial in rural environment for association of cooperative members. Also, social entrepreneurship as such stands poor chances of survival in the market competition if the role of the state is not specifically defined (Zakić, Stojanović, 2012). The existing confusion in the regulations has adverse impact on the position of social entrepreneurship. All of the mentioned reasons, and the need for harmonizing the regulation with the European Union, necessarily require an urgent response. The Government has to remove, within the shortest period possible, the legal impediments to further development of cooperative farming in Serbia, which is elaborated in greater detail further in the text.

## Framework for future development

Cooperatives are of enormous importance for the agricultural sector in Serbia mainly for the reason of small average surfaces of agricultural holdings (Republic Statistical Office, 2012) of 5.4 ha only, which are divided in more than three plots, on average. In most cases, it is neither possible to organize an efficient and profitable production nor apply modern agronomic practices and new technologies on small holdings. The result of small holdings also reflects on the exportation of agricultural commodities. Despite the fact that agricultural sector is one of the rare and few sectors in Serbia that is recording a positive foreign trade balance, its structure is inappropriate because exportation of raw agricultural products is dominant.

Although the process of agricultural holdings' consolidation is evident, the process is slow so that the only option for achieving economy of scale and increased profitability of agricultural holdings lies in association (pooling).

By forming pools, agricultural producers in Serbia have a possibility to increase their profitability through (1) purchase of intermediates at lower prices as larger quantities are purchased, (2) improvement of the sale of products through integration of larger quantities of products offered to the buyer and smaller transportation and sales costs, (3) smaller costs of the agricultural machinery and equipment, as well as the possibility to apply new technologies through collective utilization of the machinery and equipment, (4) a more convenient group certification for different market standards, (5) easier transfer of knowledge and new technologies through group trainings, (6) building of collective processing and warehousing capacities.

The conditions necessary for improving the pooling in agriculture can be divided into two areas:

1. improvement of the legal framework relating to cooperatives, and

2. improvement of the general business ambiance relevant for cooperatives.

*Improvement of the Legal Framework Relating to Cooperatives*

A new draft Law on Cooperatives is under preparation in the Ministry of Economy. The task force preparing the said draft also involves the representatives of the Ministry of Agriculture and Environment Protection, The Business Registers Agency, Cooperative Union of Serbia, Cooperative Union of Vojvodina, and experts in this area coming from different institutions.

Public debate about the Draft Law ended at the close of September 2015. The basic characteristics agreed upon in the Draft Law thus far include:

- The Draft governs all types of co-ops so that agricultural, housing, consumer, artisan, social, student-youth, pupil, health and ecological, as well as other types of cooperatives dealing with production, sale of goods, rendering of services and other activities.

- A possibility of non-equal stakes of co-op members has been introduced, while the property of co-op members is maintained through the category of contributions and stakes. Both amendments can be viewed as highly important taking into account that the obligation of equal contributions of co-op members turned out to be inefficient in the Serbian and foreign practices. Enabling non-equal contributions makes possible a larger capitalization of the co-ops because in the hitherto practice a cooperative member with the least funds used to determine the "upper limit" of the contribution[4].

- The draft Law envisages an automatic transfer of the entire socially owned property to the cooperative property without additional evidence if the socially- and state-owned property has already been defined. The practice thus far has been to register all cooperative property as social with frequently different types of entry in the Cadastre. The mentioned provision enables the cooperatives that have already proven their property not to carry out the same long-lasting procedure from the beginning. It is noteworthy that this is an issue which is not uniform. Actually, there are various types of property related issues that are intended to be resolved maximally by the draft Law. The issue that remains open is whether to allow the sale and pledging by this type of property or whether the property, as in Slovenia, will be given for utilization without the right to pledge or sell the same. The draft Law envisages that in case of discontinuation of an "old cooperative" the property is to be allocated

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4    The practice was to leave out a cooperative member who was not able to invest additionally in the cooperative.

to the Cooperative Association the member of which was the discontinued cooperative. This is certainly not an optimal solution in view of the unclear procedures in the case of a cooperative's membership in several cooperative associations, which can potentially lead to court litigations and blocking of property. A recommendation would be to select simple procedures for the transfer of such cooperative property to the local government or the state with a clear obligation that priority at transferring such property must be given to cooperatives.

- A possibility for small cooperatives of up to 20 members not to have a managing board, while a legal possibility is being sought that the director of a small cooperative of up to 20 members may discharge this function without remuneration. Needless to say, these changes are positive and unburden the costs of small cooperatives.

The issues remaining open in the Draft Cooperative Law:

- A possibility of including a legal entity in the cooperative is a practice that could contribute to increased capital of cooperatives;

- Establishment of saving-credit cooperatives and saving-credit divisions in agricultural producers' cooperatives. Serbia has a tradition of saving-credit cooperatives longer than one century. Currently, this type of cooperative is not possible, and based on the view of both the NBS and Ministry of Finance was rejected the request of the Ministry of Agriculture to make possible this particular sort of cooperative;

- Enabling that all acquired property is recorded with cooperative members. The hitherto practice of "general property" creation in cooperatives has had a markedly negative impact on cooperatives' capitalization. Namely, as it was unknown who the owner was, the economic interest of cooperative members was not to keep (immobilize) their property in the cooperatives. This is one of the key provisions that will stimulate the cooperative members not to withdraw property from the cooperatives but to have it added to their respective stakes.

- In the case of bankruptcy of "new" cooperatives created exclusively with private capital, the practice in all successful cooperative systems, with the exception of France, has been the distribution of this property to co-op members based on their respective stakes.

If personal property created as a result of the stake and efforts of cooperative members is distributed to cooperative associations or is alienated in other ways, individual producers will opt for a different type of economic organization where everything that they produce will remain their ownership, rather than for establishment of a cooperative.

- The possibility for "new" cooperatives to get reregistered in a different form of company enables flexibility and in the case of fall in the number of cooperative

members below the legal minimum allows the private sector in the cooperatives to freely select the form of organization. Erroneous is the thinking that the keeping of cooperative property in that form and various restrictions improve the cooperative sector, as already shown by the practice of EU cooperative systems, because in such restrictive systems a small number of cooperatives is formed and they, as a general rule, have small capital. Consequently, in lieu of contributing to the cooperative sector, the mentioned restrictions actually bring the cooperatives in subordinate position in terms of business against other forms of economic organization.

- A possibility of selling the cooperative stakes is desirous and makes the system flexible. An advantage of this solution is that in a situation where a cooperative member leaves the cooperative there is a possibility of selling the stake of such member. In this way, the cooperative is not burdened with the stake payment and, on the other side, this system is more just and more stimulating for establishment and operation of cooperatives in view of the fact that stakes can be worth substantially more than the value on books which, as a general rule, is paid out by the cooperative after the cease of the cooperative member's status.

- Introduction of a member - investor is being practiced in almost all developed cooperative systems, which ensures a larger capitalization of cooperatives. As a general rule, here is also introduced a various number of votes depending on the level of capital. According to experts' opinion, despite numerous positive aspects of these amendments, introduction of this modification in practice will be possible in the next amendments of the Law on Cooperatives.

- Cooperative auditing that did not function at optimal level in the previous period and was under the scope of competence of cooperatives' associations is planned to be shifted to the General Cooperative Union, if and when established, or that the Ministry of Economy assume this function and delegate it to relevant cooperative associations.

All of the above listed functions are characteristic for almost all developed cooperative systems in the world. It is paradoxical that the countries not having the law on cooperatives or having a several-page law have the most successful cooperative systems precisely thanks to freedom and a small number of restrictions imposed on the cooperatives. Essentially, of greatest relevance for the development of the co-op sector in Serbia is to have a simple, clear law that stipulates a simple cooperative forming procedure and operation, and the lowest possible costs for the cooperatives. Further, it is necessary to establish a clear property distribution system and thus avoid the present-day situation where property without its defined titular is heaping up in the cooperatives. By giving to cooperatives a business function that is not in subordinate position relative to other forms of economic organization, establishment of cooperatives and their capital increase will be spurred, taking into account that cooperative members do not currently have any economic interest in leaving the property in a cooperative the ownership of which is undefined.

The Common Market Organization Directive envisages the obligation of setting up a special form of association of agricultural producers-manufacturing organizations. Manufacturing organizations are the cooperatives of agricultural producers dealing with one line of production and falling in the so-called light market measures. The purpose of manufacturing organizations is to enable the communication of line institutions with the precisely determined group of producers. For example, if the agrarian policy in the area of milk is concerned communication is conducted with a milk producing organization. In the case of classical agricultural cooperatives, the agrarian policy creators do not know if they communicate with the producers from the appropriate area. One farmer can be a member of different manufacturing organizations, but of only one manufacturing organization within the line of production (this ensures that a farmer does not have "several votes" in the framework of one type of manufacturing organization). Further, there is a special system of EU subsidies for the manufacturing organizations, which lasts five years from the moment of a manufacturing organization's establishment. The Ministry of Agriculture is planning to adopt the CMO and to establish thereafter, by end of 2016, the licensing of manufacturing organizations within the Agrarian Payment Administration.

*Improvement of General Business Ambiance Relevant for Co-ops*

Cooperative system is not an isolated island. Therefore, apart from a good quality legal framework it is also necessary to improve the general business ambiance that is relevant for cooperatives. First and foremost, a stimulating tax system has to be put in place. The present-day VAT system treats the co-op members as third parties vis-à-vis the co-op, while the issue of double taxation and other issues are also important. Other matters emerging in practice, such as the impossibility for co-ops to perform the overhaul, impossibility for co-op members to return through co-ops the provided ear tags for cattle, and many other issues are significant. Once resolved, they will contribute to raising additional interest in doing business in the framework of cooperatives.

Provision of information to and education of farmers relating to their pooling in cooperatives are of great importance. In this regard, the Ministry of Agriculture envisages specifically within the reform of the Advisory Technical Service the work of advice providers and assistance rendering in a co-op establishment and functioning.

Changes in the subsidy provision policy and acceptance of EU principles according to which only the cooperatives realizing more than 80% of turnover with goods and services are eligible for subsidies would be significant for the support to "true cooperatives".

The new legal framework will bring contemporary legal solutions adapted to modern market, economic, financial, legal, constitutional and socio-political order and system. New regulations will establish the mechanism that will attract financial assets to cooperatives and also resolve the issue of accumulated income and sales. Legal regulations will stimulate management transformation of the cooperatives as market oriented economic entities.

## Conclusions

The example of analyzed entity in primary agricultural production suggests that best motivation is achievable by combining the cooperative and commercial principles. Solidarity and responsibility towards local community strongly raise the performance of private companies in contacts with farmers in the same way in which management professionalization and interest-based joining together in economic associations significantly raises the performance of cooperatives (Deller et al., 2009).

The first prerequisite for further improvement of the cooperative sector in Serbia is the establishment of a legal framework that governs clearly the property relations, enables settlement of "old" co-op property and improves and simplifies the cooperatives' operation, all with the intention to be accepted the principles of cooperative operation in EU member states having a successful cooperative practice. In this way, the number of cooperatives will increase, their capital will go up, and the economic aspect of the co-ops' operation will generally improve.

Of relevance is also the establishment of a legal basis required for setting-up the manufacturing organizations, which will increase the farmers' influence on the agrarian policy, make it possible for state authorities to create general purchase contracts jointly with producers, allow the use of EU subsidies (Ševarlić, 2012).

As to the measures intended to improve the general business ambiance, one particularly stands out in terms of importance: establishment of a stimulating tax policy, provision of information to farmers and their education, subsidies linked with the condition that a certain turnover of a co-op members be carried out through the co-op. In this way, fictitious cooperatives will be excluded from the subsidization system.

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# KRITIČKI OSVRT NA PRAVNI OKVIR KAO FAKTOR RAZVOJA ZADRUGARSTVA - PRIMER SRBIJE

*Goran Petković[5], Biljana Chroneos Krasavac[6], Vlado Kovačević* [7]

## Apstrakt

*Savremeno zadrugarstvo mora počivati na originalnim zadružnim principima koji su potvrđeni i osavremenjeni od strane Kongresa međunarodnog zadružnog saveza koji je održan u Mančesteru 1995. godine. Razvoj pravnog okvira kojim se reguliše zadružni sektor u Srbiji ima duboko istorijsko nasleđe. Danas je problematika zadrugarstva u Srbiji regulisana federalnim Zakonom o zadrugama iz 1996. godine. Radom se analizira u kojoj meri pravni okvir može biti podsticaj i/ili prepreka uspešnom funkcionisanju zadruga u Srbiji kao i koja vrsta rezultata se može očekivati uvođenjem modernizovanog i unapređenog pravnog okvira. Intervju sa ključnim akterima u sektoru zadrugarstva je istraživački metod koji je korišćen u radu. Ostali istraživački metodi uključuju istorijski metod, metod komparativne analize kao i metod studije slučaja. Rad se sastoji iz četiri dela: istorijska i pravna pozadina razvoja zadruga u Srbiji, pravni okvir, studija uspešnog slučaja, okvir i smernice budućeg razvoja. Radom se takođe analizira i socijalni aspekt zadrugarstva, kao i uloga zadruga u procesu socijalne inkluzije.*

**Ključne reči:** zadruge*, pravni okvir, vlasništvo, poljoprivredno gazdinstvo, individualni proizvođači.*

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# THE ENERGY AGENCY AS A PART OF AGRICULTURAL POLICY -THE ACTIVITIES AND LEGISLATIVE ISSUES

*Milan Rapajić[1], SvetoPurić[2], Srđan Vladetić[3]*

## Summary

*The authors of this paper have touched on two very important issues in Serbia, regarding the status of public agencies and the use of energy from renewable sources. Both issues have two sides - legal and economic, which are intertwined in the article. Public agencies operate in highly specialized areas of social life and have a wide range of different activities. That is the case with the activities of The Energy Agency, which should be the main promoter of the use of energy from renewable sources. For now, this independent regulatory body does not have the leading role and the paper proposes the extension of its jurisdiction. Due to the fact that Serbia is predominantly agricultural country, it has a real potential for energy production from renewable sources. These potentials are not used enough and the experience of other, highly industrialized countries in this area can be instructive in reaching measures in the field of energy policy, especially if you take into account the context of European integration, which must not ignore the requirements of environmental protection, and in which the advantages of using energy from renewable sources is particularly reflected. This paper presents the application of descriptive, legal and comparative methods.*

***Keywords:*** *Activities of the Energy Agency, renewable energy, biomass, bioethanol, Energy Law, Agricultural policy, legislative issues.*

**JEL**: *Q40, Q42.*

## Introduction

The hypothesis is based, inter alia, on the fact that for Serbia the long-term financial perspective lies in profitable investments in renewable energy rather than in imported energy, such as oil and gas. The sub-hypotheses is that the process of Serbia's integration

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into EU leads to harmonization with the EU policies in the field of energy and energy efficiency, and the application of such policies brings about a significant improvement of energy efficiency in Serbia. That is why the decision of the Energy Law of the Republic of Serbia from 2014 and an explanation of the Bill given by the Government of Serbia which defines strategy as a document establishing the energy policy have been reviewed. Serbia does not have its own energy in an amount that would meet its needs (due to the lack of energy- much of it must be imported), but it is estimated that it has a large energy potential of renewable energy sources. Considering that, the paper presents the data dealing with how much of biomass as a basis for renewable energy is used in Serbia now and how it should be used in the future in terms of improvement. Agriculture is a big consumer, but it could also become a producer of energy. Bearing in mind the amount of biomass produced and the possibilities for its utilization, biomass is not sufficiently exploited.

The following sub-hypotheses is that the existence of a specific regulatory body, such as the Agency for Energy (there are such solutions in many other countries, such as Germany or even in our neighborhood, in Serbian Republic - Energy Regulatory Commission) represents a more flexible and efficient administrative and organizational model of promoting the use of energy from renewable sources than in the case of the existence of administrative units within the ministry. The reason is that the agency model of public administration is characterized by a greater degree of specialization, expertise, a greater degree of independence of the changing political constellations, neutrality and networking at EU level. The agency model of public administration aims to break big ministry and government organizations in order to create smaller units that are easier to manage, which are more flexible, with clearly defined rules and tasks, accountable, open and subject to review and which correspond to the idea of the governance oriented to the user (Musa,2012).

## The activities of the Energy Agency of the Republic of Serbia

The Energy Agency, established by the Energy Law (Official Gazette N ° 57/2011, 80/2011, 93/2012, 124/2012), is the regulatory body established in order to promote and direct the development of the electricity and natural gas, in accordance with the principles of non-discrimination and effective competition, through the creation of a stable regulatory framework, as well as to perform other tasks stipulated by the Energy Law (Article 36, Paragraph 1 of the Law on Energy, hereinafter referred to as the Law). The Energy Agency is responsible for issuing and revoking the license for performing the activities of electricity production and combined production of electricity and heat from renewable energy sources. The license is required if the total approved connection power of the plant is over 1 MW - for the production of electricity; over 1 MW of the total power and over 1 MW of total heat power - for the combined production of electricity and heat in CHP plants and when it comes to biofuels - 1000t (or more) a year. We propose an extension function of The Energy Agency in the participation of creating a National Action Plan, which sets targets for renewable energy (and which are now set by The Ministry Of Energy) because the agency's management model

has shown greater efficiency in this domain and it employs high level experts in this field (Mihajlović, 2014). Also, from the time when the Agency was formed in 2004, it has remained, by the name and form, of the same status, while every new government formed after the elections changed the ministries that were responsible for energy. It certainly does not benefit the continuous energy policy. The ministry responsible for energy would be the first instance body to which the National Action Plan, which sets targets for renewable energy, would be submitted. After any possible objections to the plan, it would be finished and then verified by the Government of the Republic of Serbia.

Agency in all fields of activities, should be focused on problems about using and promotion renewable resources energy. This is new field of administrative regulation by agency model in Serbia.[4]

This agency is a separate legal entity and is functionally independent from any of the state bodies, as well as all the organizations and individuals involved in the energy industry. The agency is a legal entity with rights, obligations and responsibilities established by law. As the agency has a wide field of activities, its operations, as well as regulating the rights and obligations of energy companies, which are under its jurisdiction, are regulated by the law governing the operations of companies, as well as other legislation, including the statute of the agency as a kind of "little constitution" for the internal organization and operations of the agency.

In order to perform duties in accordance with the principle of efficiency, regulating the rights and obligations as quickly and effectively as possible, the agency may, by the decision of the Council, organize performing outside its headquarters in the manner and under the conditions set forth in the statute of the agency. Considering the importance of the agency as an independent regulatory body of the legal system of Serbia, and in order that it would still be under some kind of non-permanent, but current control, the approval of the Statute of the Agency, passed by the Council as its highest body, is finally given by the National Assembly.

## The use of energy from renewable sources

The use of energy from renewable sources is very important for Republic of Serbia[5]. The Energy Agency is one of the participants in the realization of these needs of Serbia. At the request of the Ministry of Energy, The Government of the Republic of Serbia

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4    There is special Agency for Renewable Resources in Germany. This agency is a part of Federal Ministry of Food, Agriculture and Consumer Protection. See more about activities of this Agency on: Bioenergy in Germany: Facts and Figures, 2014, available on: international.fnr.de/service/ publications/ In Serbian Republic in 2002 The Energy Regulatory Commission of Serbian Republic was established. It is based on the Law on Electricity, it's a specialized, autonomous and independent, non-profit organization. The task of this public law body is to regulate the monopoly position and ensure the transparent and non-discriminatory position of all participants in the electricity market in Serbian Republic in accordance with the Law on Electricity.

5    In Article 65 of the new Law on Energy in 2014, explicitly states that the use of energy from renewable sources, in the interest of the Republic of Serbia.

adopts the National Action Plan, by which targets for the use of renewable energy sources are established for a period of at least ten years.

The goals are established based on energy needs, economic opportunities, and obligations assumed by the Republic of Serbia through the ratified international agreements. The National Action Plan contains the information on energy share from renewable sources in gross final consumption of energy, the share of renewable energy in total energy consumption, the share of energy from renewable sources in the total energy consumption for heating and cooling, as well as the share of renewable energy in the total energy consumed in all forms of transport. The National Action Plan for renewable energy sources states that: "Renewable energy sources, with an estimated technically exploitable potential of about 5.6 Mtoe per year can significantly contribute to the lower use of fossil fuels and the attainment of set targets on the share of renewable sources in gross final consumption of energy, as well as the improvement of the environment. The biomass potential is about 3.4 Mtoe per year (2.3 Mtoe is unused, and 1.1 Mtoe is already in use), 1.7 Mtoe in hydropower (0.8 Mtoe per year is unused, and 0 9 Mtoe per year is exploited hydropower potential), 0.2 Mtoe per year in geothermal energy, 0.1 Mtoe per year in wind energy, 0.2 Mtoe per year in solar energy and 0.04 Mtoe per year in the biodegradable part of waste. The Republic of Serbia is already using 35% of the available technical potential of renewable energy (0.9 Mtoe of used hydro potential and 1.06 Mtoe of the biomass potential and geothermal energy). "[6]

The National plan for the use of renewable energy includes measures and the estimated financial resources for the realization of the planned share of energy from renewable sources, as well as the implementers and deadlines for the achievement of the planned activities. The National Action plan must comply with the regulations governing energy efficiency and reduce emissions that cause the greenhouse effect. The Ministry of Energy monitors the implementation of the National Action Plan and submits an annual report to the government.

The activity of the Energy Agency, the Ministry of Energy and the Government of the Republic of Serbia, should encourage the production of renewable energy sources. Renewable energy is sometimes also described as permanent energy source and an energy resource, which is used to produce electricity or heat, or in any work, the reserves of which are constantly or cyclically renewed. The very term "renewable" (Šljivac, Simic, 2009), as well as "permanent" indicates the fact that the energy is consumed in an amount which does not exceed the rate at which it is produced in nature. Sometimes the term "renewable energy sources" refers to those which are said to have so many reserves that can be exploited for millions of years. We can find attitude in theory that the primary supply sector includes fossil fuels (coal, oil, natural gas, etc.), industrial by-products (blast furnace gas and cookery gas) and local renewables (biomass, solid waste and natural resources). All the primary energy flows

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6    The National Action Plan for the use of renewable energy sources of the Republic of Serbia, the Ministry of Energy, Development and Environmental Protection, Belgrade, 2013, 7

are evaluated in tons of oil equivalent (toe) units. This sector provides for electricity and heat production deriving from large-scale as well as small-scale technologies and for other needs directly in the end-use sector (Cormio, *et. al.*, 2003). This is in contrast to non-renewable resources, where reserves are estimated at tens or hundreds of years, whereas their creation took tens of millions of years. Energy Law, Article 2, Section 47 refers to the energy from renewable sources. According to the law, it is the energy generated from neo fossil renewable sources, such as waterways, biomass, wind, solar, biogas, landfill gas, gas from the plant for sewage treatment and geothermal energy. About significance of energy of wind, Soteris A. Kalogirou writes that therefore, it can be concluded that, purely on a theoretical basis, and disregarding the mismatch between supply and demand, the wind could supply an amount of electrical energy equal to the present world electricity demand (Kalogirou, 2005). Also about renewable sources it is said that, the rapid evolution of renewable energy sources (RESs) during the last two decades resulted in the installation of many RES power systems all over the world. A disadvantage of RES systems is that the installation cost is still high, so their design optimization is desirable (Koutroulis, Kalaitzakis, 2003).

In theory, for example, one of the renewable sources of energy, such as biomass, is defined as fuel derived from plants or parts of plants, such as wood, straw, stalks of grain, shells, etc. Biomass as a renewable energy can be generally divided into wood, non-wood and animal waste. The term "wood" refers to residues from forestry and waste wood, then wood grown biomass, for example, the fast-growing trees. The non-wood biomass refers to fast-growing algae and grass. Also, biomass includes waste and waste from agriculture, animal waste and other residues. Wood is most commonly used, which is formed as a by-product or waste and residues that can no longer be utilized. Such biomass is used as fuel in power plants to produce electricity and heat, or it is processed into gaseous or liquid fuels for use in vehicles or homes. The Energy Development Strategy of the Republic of Serbia states that: "Biomass is an important energy potential of the Republic of Serbia. The potential of biomass is estimated at 3.448 million tons and in the total potential of renewable energy it accounts for 61%. The majority of this potential lies in woody biomass - 1.53 million tons and then the agricultural biomass - 1.67 million tons (remains in crop production, animal husbandry, fruit growing, vine growing and primary processing of fruits), while the potential of biodegradable municipal waste is estimated at 205 thousand tons. Biodegradable waste (other than municipal) includes waste edible oils and animal waste (rendering slaughter waste) in a total amount of 0.043 million tons / year."[7] The potential of renewable energy sources is enormous as they can in principle meet many times the world's energy demand. Renewable energy sources such as biomass, wind, solar, hydropower, and geothermal can provide sustainable energy services, based on the use of routinely available, indigenous resources. A transition to renewables-based energy systems is looking increasingly likely as their costs decline while the price of oil and gas continue

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7    The Energy Development Strategy of the Republic of Serbia until 2025 with projections to 2030, the National Assembly of the Republic of Serbia, 2015, 8

to fluctuate. In the past 30 years solar and wind power systems have experienced rapid sales growth, declining capital costs and costs of electricity generated, and have continued to improve their performance characteristics (Herzog, *et. al.*, 2013).

In the most important agricultural region of Serbia, in the autonomous province of Vojvodina there is the greatest potential of agricultural residues (straw, soybeans, wheat, barley and corn remains), and other plant residues and waste from livestock production that can be converted into biogas. Moreover, as a major producer of cereals and industrial crops (soybean, sunflower, canola, etc.), Vojvodina has great potential for the production of biofuels (biodiesel and ethanol). The suitability of renewable energy sources is reflected in the fact that they are inexhaustible natural form of energy that is all around us.

In Serbia, the distribution of resources of renewable energy ranges as follows: in the first place there are bio-renewable energy sources, for example, biomass, solar energy, small rivers, wind energy and geothermal energy. Energy Law also defines some of these renewable energy sources. Thus, in Article 2 (paragraphs 3.4 and 5), definitions of some forms of renewable energy are given. According to the legal definition, biomass means the biodegradable fraction of products, waste and residues of biological origin from agriculture (including vegetal and animal materials), forestry and related industries, as well as the biodegradable fraction of industrial and municipal waste.

Biofuels are also, as already mentioned, renewable energy, their legal definition being - the liquid or gaseous fuel for transport, produced from biomass. Bio-liquid is the fuel used to produce electricity and thermal energy for heating and cooling, also produced from biomass, except for the traffic. Article 2 of the Energy Law also defines what the warranty of the origin of the product means. In terms of the law, it is a document that has the sole function to prove the final customer that a given share or quantity of energy is produced from renewable energy sources, as well as the combined production of electricity and heat with high efficiency of primary energy. The warranty of origin for the amount of energy produced in a given period will be issued only once and is a document in electronic form, valid for one year from the date of issue and it is portable.

The paper has pointed out that the use of electricity from renewable energy sources is the important for the Serbian economy, and considering the fact that Serbia is a country rich in agricultural regions, the use of renewable energy in agriculture is also an important national-economic interests of Serbia. The Energy Law relatively extensively prescribed what the incentives to use renewable sources for electricity production are. In terms of legal norms, incentives for renewable electricity production include the obligation to purchase electricity from a privileged producer, the price at which this energy is purchased and the period of validity of the obligation to purchase the electricity, as well as taking over the balance sheet liability.

The public supplier is obligated to purchase electricity from the privileged producer, under a contract for the purchase of electricity, in accordance with the Energy Law and secondary legislation passed by the Ministry of Energy and the Energy

Agency in accordance with the law. At the request of the energy subject that has gained temporary status of a privileged producer, the public supplier shall, within thirty days from the date of the application, conclude a preliminary contract for the purchase of electricity. The public supplier on the other hand is not obliged to enter into a contract to purchase electricity from a privileged producer, if the energy entity does not acquire the final status of privileged producer, but remains in a temporary status. Means to incentivize the use of renewable energy are provided by the final customers, who pay for a separate fee for the incentive, in addition to the access to the transmission or distribution system bill and these two are reported separately. Government, as the central organ of executive power, at the request of the competent ministry (and in this case it is the Ministry of Energy and Mines), provides for incentives for the production of electricity using renewable energy sources and for the purchase and consumption depending on the type and strength of a plant. Government prescribes the prices at which electricity is purchased from the privileged producers, the period of validity of the price and the obligation to purchase the electricity. Also, government provides for obligations on balance responsibility, content and duration of the pre-contract and contract to purchase electricity from the privileged producers as well as the method of calculation of incentive compensation and allocation of funds on that basis. At the request of the Ministry, Government determines the amount of compensation to be paid for incentives for renewable energy not later than the end of December of the current year for the following year. Because of its importance, this fee must be published in the Official Gazette of the Republic of Serbia.

A privileged producer has the right to use the incentives, then they have a priority in taking over the total electricity into  the transmission or distribution system, except in cases of threatened safety of operation of these systems. A privileged producer has the right to use tax incentives, exemptions in customs clearance, or the right to subsidies and other incentives. Since this is a sensitive area (because of the high profitability of the very economic activity in the energy sector different misuses are possible), the cases in which the energy operator loses the status of a privileged producer are defined by the law. The energy operator will lose the status if the decision on acquiring the status is based on false data.

Since the oil reserves in the world are exhaustible, biofuels will be used more and more, not only in the transport sector, but also in different types of production. The authority having jurisdiction over prescribing the mandatory share of biofuels in the transport sector and measures for its purchase is  the Government of the Republic of Serbia. The government also provides incentives for biofuel production. So the government, at the request of two ministries: the Ministry of Energy and the Ministry responsible for the environment, determines the criteria for the sustainable production of biofuels. There are two kinds of biofuels- bioethanol and biodiesel. Bioethanol is a type of ethanol produced from biomass or biodegradable parts of waste to be used as biofuel. In theory, bioethanol is defined as "one of the most important alternative renewable sources of energy that belongs to biofuels (in addition to biodiesel, bio-methanol etc.). It is

obtained by fermentation of renewable raw materials, i.e. the fermentation of sugars present in biomass or sugar obtained by previous enzymatic conversion of biomass components. It is a significant substitute for fossil fuels and in many countries it is already being used as an additive to petrol, so it is classified as a strategic raw material. "(Nikolic, 2009)

So the specificity of bioethanol is that it can be used in internal combustion engines in addition to petrol, or as its substitute. For example, adding no more than 20% of ethanol into petrol does not require any modifications to the car engine that uses the specified percentage of petrol mixed with bioethanol. Greater percentages of bioethanol require modifications of the engine. Vehicles using bioethanol as fuel are more expensive than vehicles using petrol (5-10%).

However, the countries qualified by the economic policy as agricultural, which Serbia certainly is, can see the opportunity for their future exports in this. The highly industrialized countries, the so-called big car producers, are looking for those markets which have significant resources of ingredients that produce bioethanol. The fertile fields of Vojvodina may be more used as the base for the production of bioethanol in the future.

Today, the situation in Serbia when it comes to the production of bio-ethanol as a fuel is far from ideal. The production and consumption of bio-ethanol as a motor fuel is not sufficiently developed and organized in Serbia, so that our country imports a significant portion of motor fuels. Examples from other countries show that the introduction of incentive programs in the Energy Policy depends on the government and its assistance. Serbia should adopt appropriate programs that would include the production of bioethanol for fuel and the substitution of motor fuel with bioethanol. Since we are a European country determined to join the EU, the measures in this field should probably be similar to those of the European Union.

The legislation of the European Union functions with directives and recommendations, thus creating a unified legal framework in all areas of social life of member countries. The detailed provisions of the directives are left to the member countries. For example, in order to promote biofuels and other alternative forms of fuel, though mainly for road transport, two directives were adopted in 2003: Directive 2003/30/EC, which requires from member countries to produce or provide the market with a minimum amount of biofuels, which would meet the goal to substitute 2% of fossil fuels by the end of 2005 and 5.75% by the end of 2010, compared to the energy content. The EU member countries obliged in 2004 to submit annual reports on the actions in this plan to the competent bodies of the EU. Directive 2003/96/EC provides an opportunity for Member Countries to apply different taxes on these fuels in order to encourage the development of this type of fuel. In 2002 already, nine EU countries (Germany, France, the UK, Italy, Spain, Poland, Sweden, Austria and the Czech Republic) fully or partially were freed from taxes for biofuels. The main objectives of the European Directives (which in future will increasingly regard Serbia as its entry into the European Union is expected) can be summed up in a few aspects. The first aspect is reflected in

the fact that the European Union depends on external sources of fuel. The European Union currently imports about 50% of energy, which may have reached 70% by 2030. As for oil, the situation with numbers is even worse. It is discouraging that the EU dependence on oil export will increase to 90% in 2020.  The next aspect is to achieve the goals of the Kyoto agreement, which was signed in 1997, and to reduce the gas emission that contributes to greenhouse effect. Of six chemical compounds and gases that influence the greenhouse effect most attention is paid to carbon dioxide - $CO_2$. According to the above Kyoto agreement, it is necessary to reduce the emission of carbon dioxide in the period from 2008 to 2012 for about 5% in comparison to 1990, which has been done to a great extent. One of the aspects of the above directives and their integral objectives is to reach the figure of 20% of substitute of traditional fuels in road transport by 2020. Directive 2003/30/EC mostly relates to fuels used in road transport, since they are considered to participate with more than 85% of the total fuel of the EU transport. Regarding the existing capacity, the directives adopted and the accompanying regulations, it is obviously necessary for the EU to take energetic steps to increase the capacity of ethanol production. This statement also applies for Serbia. The goal of the EU was to substitute 2% of fossil fuel by the end of 2005, according to Directive 2003/30/EC, which was not done. We must stress that, in the period from 2003 to 2005, ten of the EU member countries did not use either biodiesel or bioethanol as fuel. Almost ten years ago, in 2005, two EU countries with the highest share of bioethanol as biofuel used were Germany and Sweden. Considering these data, it can be concluded that the estimates that biofuels will substitute 20% of traditional fuels by 2020 are not realistic. It is realistic, considering the present state, that this percentage will reach about 10%. This assessment was carried out in the energy policy of the EU (Energy Policy Document), adopted in 2007.

### The situation in Serbia and a brief review of its agriculture in the area of production of certain renewable energy

On the territory of the northern Serbian province of Vojvodina (once part of the Austro-Hungarian Empire) the first plant for the production of ethanol was built. This fact shows that Vojvodina, as the largest agricultural region in Serbia, is potentially the most fertile ground for the development of renewable energy, which has been proved in the past and the Government of the Republic of Serbia is still expected to improve it, through its economic policies, the incentives to manufacturers and potential manufacturers and thus give them economic stimulus. During the sixties of the twentieth century a serious development of ethanol production in Serbia began, along with the formation of large industrial capacity with modern equipment and technology.

In Serbia in 1996, there were a dozen of producers whose daily collective capacity stood at just over 150,000 hl, corresponding to the annual capacity of approximately 48 million hl if the calculation takes 320 working days[8]."In Serbia, there are opportunities for the production of bioethanol and biodiesel. The raw materials used for the

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8    1 hl equals 1l of absolute alcohol

production of bioethanol are grain, sorghum, Jerusalem artichoke and potatoes. For the production of biodiesel oilseeds can be used - sunflower, soybean and canola, as well as waste edible oils. All the above raw materials can be considered a potential for the production of biofuels only after satisfying all other requirements. It is estimated that the market surplus of grain is more than one million tons, but its use for the production of bioethanol is economically justified only in cases where it cannot be exported and in cases where it is not possible to ensure the production of bioethanol from lingo cellulosic biomass (Vukoje, 2013). Also, according to estimates, there are about 100,000 hectares of marginal land in Serbia, that can be used for the cultivation of sorghum and Jerusalem artichoke, which could produce about 200 thousand tons of ethanol per year. The cultivation of oilseeds for biodiesel production could be carried out on 350,000 hectares, which would allow the production of about 220,000 tons of biodiesel. It is estimated that about 10,000 tons of waste edible oil suitable for biodiesel production can be collected annually" (The Energy Development Strategy, 2015). Today in our country the production of ethanol based on cereals is at a rate of about 50%, whereas the rest of it is based on molasses. Although during the nineties Serbia was under the heavy burden of economic sanctions, the ethanol production was at a higher level than it is today. The largest of three plants for the production of ethanol are in the political and economic center of Serbia - Belgrade and at two locations in Vojvodina - Crvenka and Kovin. Over 80% of the production of this substance in Serbia is carried out in these three plants.

The theory states that none of these systems has the equipment for dehydration of ethanol. In this sense, we should expect the proposals of professional associations in central and regional chambers of commerce, but above all of the government ministries and the Energy Agency. We must emphasize that the Energy Agency of the Republic of Serbia, as an independent regulatory body, has a broader mission in the economic and legal system of Serbia, which is to, at the normative level, create a legal framework to facilitate the production and use of renewable energy.

If we look more broadly at the social role of the Agency, its leading management has an obligation to respect the public interest and by promoting it, informs the executive government of the necessity of modernizing and improving the production process of renewable energy sources in accordance with the requirements of the modern global market. Our claim is supported by the fact that the production of ethanol, for example, in 2005 was nearly at the level of production achieved in 1985, but was significantly lower than the amount of ethanol produced in 1991. During the same period, the production of ethanol in the world doubled. The trend of growth in Serbia was similar, until 1991 when production began to decline. Even the production growth that was achieved from 1999 to 2005 is not the true, realistic, picture, due to the mentioned economic blockade of Serbia - the sanctions of the United Nations. Most of the existing facilities do not work effectively for different reasons.

Among the reasons of why it is not effective, we can mention: the total state of the economy, the negative tendencies in terms of total production, the inadequate

legislation, the classification of ethanol under legislation standardized for wine and spirits. This practically narrows the possibility of using ethanol for other purposes for which it is used in the world, for example in the chemical industry and fuel industry. Along with the stagnant production in the field of renewable energy, several factors coincide: bad government policy regarding the development strategy of the industry in general, the inability of consolidation after a period of crisis and stagnation and in some cases outdated equipment. If we look at the production in our country through the prism of the adopted EU directives (2003/96/EC and 2003/30EC), the targets set for 2020 are actually unfulfillable. It is important to mention that in Serbia today there is no organized consumption and production of bio-ethanol as a motor fuel. The Republic of Serbia is the importer of a significant part of their consumption of motor fuels.

We will further focus on the use of biomass from agricultural waste as a renewable energy source. It has already been noted in this paper that biomass is renewable, biodegradable organic matter of vegetable or animal origin, as well as biodegradable fraction of industrial and municipal waste that transforms into multiple forms of energy through different processes. The resulting energy is primarily used for the production of electricity and heat. The fact that the energy in biomass is of chemical nature, makes this energy constant.We used data from Renewable Energy Data Book, 2012, U.S. Department of Energy, which evidence about significance of biomass and other renewable sources in the first economy in the world : In 2012 in the United States, biomass produced about 11% of total renewable electricity generation, wind produced 28%, solar (photovoltaics and concentrating solar power) produced 3%, hydropower produced 55%, and geothermal produced 3%. In contrast to the solar energy, the energy of the biomass is no downtime. Another difficulty in agricultural production in Serbia is reflected in the fact that it is difficult to estimate the current amount of waste. Most of the waste is treated or disposed of in the area in which it is created. It is often destroyed in the same place, although it could be used for other, more useful purposes.

Waste can generally be divided into controlled and uncontrolled waste, but both groups actually represent biomass such as wood waste (unused and waste wood, remains of tree stumps and logs, semi-wild trees and the like), breeding fast-growing trees and fast-growing algae and grasses, residues and waste from agriculture (natural liquid manure, straw, leaves, husks, cobs of different crops (sugar beet, sugar cane, corn), energy crops (turnips and potatoes), industrial waste (from the industry that produces organic waste - the beverage industry and food industry) and finally municipal waste such as paper and plant remains should be mentioned.

Energy from biomass can be produced in several ways. The types of biomass energy include: 1. direct burning of wood, wood waste and crop residues for thermal energy production; 2. digestion, i.e., processing animal waste (manure) into biogas; 3. processing biomass into alcohol (ethanol) or the production of vegetable oils. (Djordjevic, 2008). In Serbian agriculture there are large amounts of crop residue that can be partly used for energy purposes, so it is unacceptable to remove all plant debris from soil , in order not to deplete the soil and not to disrupt the natural cycle of circulation of matter in it.

As a result of ignorance of what to do with plant residues, it is usually burned in the fields, which is very harmful.

Also, biomass from livestock production represents a significant energy source. The energy generated from liquid manure during exploitation does not emit harmful gases that are produced during combustion of conventional fossil fuels, thus contributing to greater environmental protection. For example, about 10-12 pounds of liquid manure with 4-10% of dry matter is needed to obtain one cubic meter of gas. (Furman, *et. al.*, 2007). The domestic animals from which liquid manure can be used to produce biogas are dairy cows, cattle, fattening pigs and laying hens. This description, when it comes to energy from biomass, clearly leads to the conclusion that the Serbian agriculture has certainly great potential in this field.

Therefore, the question is where the problem lies. The problem is investing in systems for the production of biogas. Exploitation is a pure loss, if the energy spent on the extraction and processing of energy is higher than the energy gained from this resource. The goal is to create a system of self-supporting. If the economic policy of the Government of Serbia, established on April 27th 2014, moves in the direction of encouraging new forms of production within agriculture, it can be expected in the future that the investment in the plant to produce energy from biomass will enable progress in the development of not only agriculture, but also energy, environment protection and, generally, of every region which chooses to use them. This state is supported by a realistic reason, since Serbia's potentials in biomass are not small. With its area of 88 361 square kilometers, Serbia is a country rich in agricultural land. This is supported by the fact that there are about 45 000 square kilometers of farmland in Serbia. Even 24 000 square kilometers in Serbia are covered by forest. As noted by Brkic and Furman, it is annually produced about 13 million tons of biomass in Serbia (Brkic, Furman, 2004), where the production of Vojvodina is 70%, i.e. 9 million tons of biomass. The first constructions of the plants and facilities for the use of biomass for energy purposes began in Vojvodina. The Republic of Serbia is certainly aware of the importance of renewable energy and is one of the members of the international organization for renewable energy - the IRENA (International Renewable Energy Agency).

## Summarized concluding remarks

Serbia is nowadays deeply involved in the process of European integration, becoming a candidate country for EU membership. This path requires the fulfillment of obligations relating to energy policy in the field of (agro) Economy and the mosaic of Serbian legal regulations, which should completely comply with a number of European directives in the field of energy, and the objectives of which have already been mentioned in this paper. Accepting the principles of European energy policy requires the fulfillment of obligations related to environment protection. The EU environmental law requires the Serbian reduction of carbon dioxide into the air. Using biomass instead of liquid fuel significantly reduces environmental pollution. The combustion of biomass does not increase the content of carbon - dioxide in the atmosphere and does not create a

greenhouse effects, it does not even create hazardous ash.

It is necessary to improve the Energy law at the normative level and adapt EU legislation, since the EU has long tradition in the use of biomass for energy purposes. Although this law introduced subsidies to producers of renewable energy, it is necessary to encourage foreign direct investment in this area. By including the domestic economy in the development of technology, equipment production and the training of future producers of energy from renewable sources, the public awareness of the importance of this issue would be raised. The fact that renewable energy sources are in rural areas can provide greater employment of the people from rural areas, which would improve the economy in the country and raise the level of gross domestic product. Broader social and positive implications would lead to stopping negative migrations from villages to cities, in a word –to the revival Serbian villages.

However, in the past more and today a little less, there are obstacles to the development of renewable energy sector in Serbia. The responsibilities of the operator to give priority in connecting to the grid to the producers that use renewable energy sources and in dispatching renewable energy are still not clearly defined; there is a  lack of a substantial number of equipment and processes standards for the exploitation of renewable energy sources; there is an insufficient number of regulations for the design, construction, inspection,  assembly and installation of devices that use renewable sources of energy; there is an insufficient number of accredited laboratories certified for plants using renewable energy sources; there are non-economic price of electricity and the disparity in energy prices. In addition to these obstacles, we should mention the additional problems, such as costly bank loans for projects using renewable energy sources, complicated and lengthy procedures for issuing permits and approvals for construction projects facilities for renewable energy exploitation, the insufficiently supportive tax and subsidy system for renewable energy and the lack of public awareness about the importance of using renewable energy sources. When the renewable energy sector is still developing, the incentives are necessary, which should be in compliance with state policies. In order to overcome barriers and realize the aims,  it is necessary, first of all, to establish an effective legislative framework for the sustainable use of renewable energy sources, then to remove the administrative obstacles mentioned above. It is also necessary to establish an effective institutional and organizational framework for the sustainable use of renewable energy sources which includes the strengthening of the administrative capacity for the sustainable use of renewable energy sources. In practice, it is necessary to introduce additional incentives for those who implement energy efficiency measures and for those who produce and use renewable energy sources. It is stated here because the Law on Energy from 2014 formed the legal basis in terms of improving procedures in the field of renewable energy and they include the following incentives for investors who plan to use this type of energy source:  all producers that use renewable sources of energy can achieve a temporary status and thus increase the bankability of their projects; in addition to temporary status, the status of privileged producer of electricity is introduced as well as the status of producers of renewable energy,  which creates a precondition that all producers who use renewable source manage to obtain the  guarantee of origin; a new model contract for

the purchase of electricity from the suspensive condition was introduced instead of three previous contracts. An investor who plans to use renewable energy sources for electricity production will have all the conditions and incentive measures in the trial period defined prior to the start of construction and after acquiring the status of a privileged producer. At the end we want to stress that "education, strong vision and commitment could be the basis for strengthening renewable energy sources in Serbia". If we recall the beginning of the last century, electricity was only one" innovation ", which only caused a lot of doubt and resistance with many people. Fortunately for the world, there were those who saw the future in it, there were financiers who could understand the value of the "innovation" and all its possibilities. If we only consider this period of global energy history, we will understand today's effort to turn to the new, cheaper and cleaner forms of energy.[9]

However, the legal form, which is the basis of this work, should not be forgotten. That means that we need to fuse many competencies related to renewable energy under the auspices of the Energy Agency, which are now split among the Government, relevant ministries (Ministry of Energy and Mines and the Ministry of Agriculture and Environment) and the Agency. To this end, we propose the establishment of the Special Council of the Energy Agency, which would be called the Council for energy efficiency and renewable energy. The Council would also be a special advisory body of the President of the Republic of Serbia. The council would include the representatives of the faculty departments and research institutes involved in the study of energy efficiency and energy production from renewable sources, special advisors of the relevant Ministers in the field of renewable energy, a member of the Chamber of Commerce of Serbia, as well as President of the Council of the Energy Agency and at least one staff officer of the Agency with narrow expertise on renewable energy. The special council for energy efficiency and renewable energy of the Energy Agency, which is also an advisory body of the President of the Government, would, among all, perform similar work to that performed by the abolished Energy Efficiency Agency. We believe that this would benefit to the realization of national interests, which is reflected in a variety of incentives built into renewable energy.

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[9] A bankability project is the project that is sufficiently powerful, prestigious and stable to ensure profitability - the project that is sustainable. This project has provided cash flow, which means that the project is well conceived from legal, technical and economic aspects. It is also the project for which it is easy to provide investors (commercial banks) who are ready to finance because they recognize that the cash flows are stable and that their investment will be returned. In the end it is a project for which there is quality collateral, acceptable to the bank, i.e. reliable and thus quickly and easily enforceable.

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# АГЕНЦИЈЕ ЗА ЕНЕРГЕТИКУ- КАО ДЕО ПОЉОПРИВРЕДНЕ ПОЛИТИКЕ - ДЕЛАТНОСТ И ЛЕГИСЛАТИВА

*Milan Rapajić[10], Sveto Puric[11], Srđan Vladetić[12]*

## Rezime

У раду, аутори су се дотакли две веома значајне теме у Србији које се тичу положаја јавних агенција и коришћења енергије из обновљивих извора. Обе теме имају своје две стране- правну и економску, које се у чланку преплићу. Јавне агенције су значајни субјекти српске јавне управе, које делују у уско специјализованим областима друштвеног живота. Те области се крећу у широком дијапазону разноврсних делатности. Управо је такав случај са делатношћу Агенције за енергетику која треба да буде главни промотер коришћења енергије из обновљивих извора. С обзиром на чињеницу да је Србија претежно пољопривредна земља, она има реалне потенцијале за производњу енергије из обновљивих извора. Ти потенцијали нису довољно искоришћени, а искуства других високо индустријализованих земаља у овој сфери могу да буду поучна приликом доношења мера из сфере енергетске политике, посебно ако се узме у обзир контекст европских интеграција, који не сме да пренебрегне захтеве заштите животне средине, а у чему се посебно огледа позитивност коришћења енергије из обновљивих извора. У раду је извршена примена дескриптивног, правног и упоредног метода.

***Кључне речи:*** *Делатност Агенције за енергетику, обновљиви извори енергије, биомаса, биоетанол, Закон о енергетици, пољопривредна политика*

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# THE ROLE AND IMPORTANCE OF STRATEGIC BUDGETING FOR COMPETITIVENESS OF THE AGRIBUSINESS SUPPLY CHAIN[1]

*Bojan Savić[2], Zorica Vasiljević[3], Nikola Popović[4]*

## Summary

*Rapid challenges and changes that are an integral part of the business environment require from the enterprises to plan carefully their business, as well as to assess the probability of occurrence and outcome of future events. The importance of this approach is even more evident in the field of agribusiness, which is characterized by the increasingly unfavorable business conditions along with numerous specificities and limitations typical for agricultural activity. It is primarily about the growing business costs on one side and disproportionate changes in the level of agricultural products' selling prices on the other one. The enterprises form a supply chain in order to reduce risk and uncertainty, to realize the production of high-quality products at competitive prices, to maintain and increase the market share. The realization of such complex goals requires an adequate approach to the budgeting process. The aim of the paper is to highlight the importance, achievements and challenges of budgeting as an instrument of management accounting and strategic budget in order to support management in their efforts of acquiring and improving the competitiveness of the entire supply chain.*

***Key words:*** *management accounting, strategic budget, supply chain, agribusiness sector, competitiveness.*

**JEL:** *M41, Q13, Q14.*

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## Introduction

The efficient management of an enterprise as well as the realization of defined goals requires that a number of decisions should be adopted by the enterprise management. The crucial goal of both modern enterprises and stakeholders is creation of the value for owners, and that is why the necessary precondition for realization of this goal is realization of the profitable business operations in the long run.

In an effort to achieve and maintain profitability, farmers in the Republic of Serbia are faced with numerous challenges, which are primarily manifested in the form of inadequate technical and technological equipment, a high degree of uncertainty in agricultural production subsidizing, the risk of climate changes and weather conditions, the changes in legal regulations, low purchasing prices, a buyer's monopoly, etc. All mentioned items contribute to the creation of an environment in which the business planning has become very complex, since the supply, but also the demand for the products have become extremely volatile, and that the domestic agribusiness sector enterprises are frequently confronted with a struggle for mere survival. Hence, the solution can be identified, among other things, in the interconnection of producers and consumers in the so-called supply chains. Such systems are often formed on the basis of contracts that precisely define the rights and obligations of all participants in the supply chain.

A key advantage of the above-mentioned approach is reflected in the fact that producers produce for the known buyer, thus uncertainty regarding the sales of products and the overall business operations have been significantly reduced. The main motives for establishment of the supply chains are contained in strengthening the potential to realize opportunities in the environment, to minimize unfavorable effects concerning a number of risks and to improve the competitive position of all participants. However, the efficient functioning of the supply chain in general, and in the agribusiness sector in particular, assumes the participation and support of many entities that are located between producers and consumers, which should contribute and ensure that products without difficulties find their way to the final consumers.

In order to design the future business operations and achieve profitability, management has at disposal different budgeting techniques. They are used for different purposes, and beside defined goals and business conditions, the choice is determined by the type of activity the enterprise is dealing with. This further implies that it is necessary to adjust the budgeting process to the specificities of the business operations for the enterprises in agribusiness sector, i.e. for particular types of agricultural production, processing and distribution of products within this sector, but also to the locations where business operations are conducted.

The goal of this paper is to highlight the importance of budgeting implementation as an instrument of management accounting in the agribusiness sector in gaining and maintaining a competitive advantage not only of individual enterprises, but the entire agribusiness sector supply chains, with special reference to the strategic budget. This will offer to the local managers who manage the complex agribusiness systems a powerful instrument which could be significant support in their efforts to increase

the flexibility and productivity of the system and to compete successfully with other producers at the global market and to achieve sustainable and profitable business.

## Material and Method

In this paper there were used the methods that best reflects the character of the analysis given in the titled topic. In an effort to examine and analyze the budgeting process as an instrument of management accounting and to carry out strategic interpretation of the strategic budget as the key instrument used by management for the purpose of directing business activities and decision-making, there were applied scientific research methods such as descriptive method, methods of analysis and synthesis, method of systematization, comparative method, inductive reasoning method and "desk research" method. The contribution of this paper is reflected in the review and analysis of the budgeting process and the strategic budget as an instrument of the management accounting, which currently are not widely represented in domestic agribusiness enterprises, as well as to consider the specificities of their application in complex systems like the supply chains. By this analyze it is pointing to their potentials to contribute to a higher degree of efficiency, flexibility, competitiveness and finally to the business profitability. The sources of literature used for this research were the domestic and foreign scientific literature from the domain of the considered issues, as well as the data sources available on the Internet websites.

## The Supply Chain in the Agribusiness Sector

The need of the supply chain establishment is conditioned by the trends that design the business environment, such as an imperative of focusing on customers, development of the information society and globalization of market. The presence of these trends has caused changes in strategies for achieving and sustaining competitive advantage of numerous enterprises, while requiring at the same time the adequate concept of value chain management (Ivanov, Sokolov, 2010). In a business environment where the production orientation of an enterprise is dominant, the focus is put on products, all efforts are directed toward maximization of the production volume, the business planning has operational character, while an exchange of information within enterprise is quite limited. Contrary to this, in the market-oriented enterprises the focus is on finding optimal combinations between markets and products, the efforts are focused on maximization of value added, the planning has strategic character, the enterprises are trying to connect mutually, while the information has been freely exchanged not only at the level of an enterprise, but also within the whole supply chain (Lindgreen, Hingley, 2010). The market-oriented agribusiness enterprises put additional emphasis on respecting rigorous standards of quality and safety, as well as on the environmental regulations.

The main motives for establishment of the supply chains are contained in strengthening the potential of the entire system to realize the opportunities in the environment, to minimize unfavorable effects coming from the numerous risks and to improve the competitive position of all participating enterprises. However, the efficient functioning

of the supply chain assumes the participation and support of many entities that are located between producers and consumers, including the government support as well, in order to enable the products find their way to the final consumers without difficulties. First of all those are various transportation, freight forwarding, warehousing, insurance, marketing, wholesale, retail and other specialized organizations, which through mutual cooperation should contribute to be overcome the spatial and temporal gap between producers and final consumers (Malinić, Janković, 2011).

The first step in establishment of the supply chain in agribusiness is an analysis of the existing trade system and environment (flows of products, the level of trade, governmental policies and other circumstances) aiming at identification of factors that are critical for success of the supply chain. This includes the implementation of a SWOT analysis to identify strengths and weaknesses of potential supply chain, but also possible opportunities and threats that exist in the environment. On the basis of information that are result of such analysis, potential participants make a decision on whether to include in the supply chain. If they choose to participate in it, then define their roles, functions and mutual relationships in the supply chain (Rockel et al., 2002).

If, for example, it is analyzed the process of the milk production and processing, it is indisputably that the path from the raw milk as an input to the final product rather long and as such it includes the following: production and delivery of milk by the farmers, raw milk reception and cooling of milk in collection stations, transport of milk to dairy plants, milk processing (filtration, separation, standardization on the basis of fat content, pasteurization, homogenization, application of different bacterial cultures, finalization), packing and storage of dairy products and their further shipping to the wholesale centers, delivery to the retail outlets based on contracts or export to the foreign markets (Bachev, 2011).

With regard to the producers of basic inputs such as milk, meat, fruit and vegetables for the production of the food industry, in addition to the challenges of agricultural production itself, the successful placement of products includes even the issues of adequate transport, storage and protection from the product spoiling. Compared to their competitors from developed countries, the Serbian producers are additionally faced with the challenges of underdeveloped transportation infrastructure that leads to the emergence of risks in terms of quality and safety of products as well as the related occurrence of losses due to the product shrinkage and spoilage. Therefore, when it comes to the production of agricultural and food products, it is necessary to include in the supply chain even the cold stores, i.e. the "cold chain", which represents the specificity compared to the supply chains in other sectors.

Activities of mentioned economic subjects undoubtedly have an impact on consumer satisfaction. Thus, for example, customers will be satisfied only if the products are delivered in optimal deadlines, if the products have high quality (in the case of food products the important attributes are freshness, flavor, taste) and at an affordable price. The above-mentioned requirements indicate that achieving a high level of customer

satisfaction is assumed to be optimally managed by suppliers, by the product quality, then to be synchronized the distribution channels, to manage effectively by the customers, which all together require a high degree of coordination and collaboration among the participants. In other words, the production and sales of products have become a challenge which surpasses individual enterprises-producers and as such they have been positioned in the center of interest of the top management for the entire supply chain. Hence, the supply chain should integrate all key business functions (the product design, production, marketing, sales, finance, IT, logistics), as well as the business processes within individual enterprises, but also between all the companies that participate in the supply chain (Ayers, 2006). In other words, the functions of individual members at the level of the supply chain are viewed as the business processes. Only in this way each participant will provide an appropriate contribution to the creation of superior value of the final product, and thus the value for customers.

The advantages of involvement in the supply chain are the following: reducing the risk of losses arising in transportation and storage, the sales increase, providing access to the modern technologies, capital and specialized knowledge, better information about the flow of products and developments in the market, then in a more effective quality control and product safety, the risk sharing between partners, an increase of revenues and profits, and finally, in a higher sum of total created value (Rockel et al., 2002).

In order the listed business advantages within the supply chain should be successfully implemented, it is necessary to manage them efficiently. Production for known customer demands abandoning of the traditional approach (which is characterized by production for the storage) and introducing of so-called *Lean concept*, *Just-in-time* system of the stock management, which further assumes a high level of collaboration in the supply chain, effective management of orders, timely deliveries, as well as the high level of customers' satisfaction (Ross, 2011).

A key task of supply chain management is the planning and management of the supply processes (suppliers), then of the resources' transformation (production), as well as of the activities in the field of logistics. However, it should not be neglect the necessity of the customers' management, since by the strengthening of their competitiveness it is contributed not only to the strengthening of enterprises-producers, but also to the other participants in the supply chain.

The above clearly shows the role and importance of the budgeting process for the purpose of efficient management and implementation of the defined supply chain goals. Namely, the budget has the planning function but also the control one. Through the budgeting process it is allowed that the objectives and strategies of the supply chain are translated into concrete activities of all participants. On the other hand, by measuring of the accordance between the budgetary defined and implemented performances, it is possible to control the business efficiency for particular participants, to quantify their contributions, to determine responsibility for the achieve results and to undertake the necessary corrective activities.

### The Role and Importance of Budgeting and Strategic Budget in the Supply Chain

The budgeting can be defined as the process by which management projected the future of an enterprise. The budget as a direct result of this process represents a plan of the enterprise activities for a defined period of time. More precisely, the budget may include the financial and non-financial projections of planned activities, depending on whether it comes to operational or financial budget. Thus, for example, the budget shows the necessary and available types and quantities of resources which represent the basis for realization of defined objectives (direct and auxiliary material), then the anticipated quantity volume of production and sales, number of new products, number of employees, etc. The listed non-financial data are the basis for determining the financial implications of the planned activities, i.e. they are an assumption for projections of revenues, expenses, profits and investments for the given time horizon. The cited financial effects get their materialization in the form of projected financial statements so- called pro-forma financial statement (Mowen et al., 2014).

**Figure 1.** Budgeting framework - the supply chain perspective
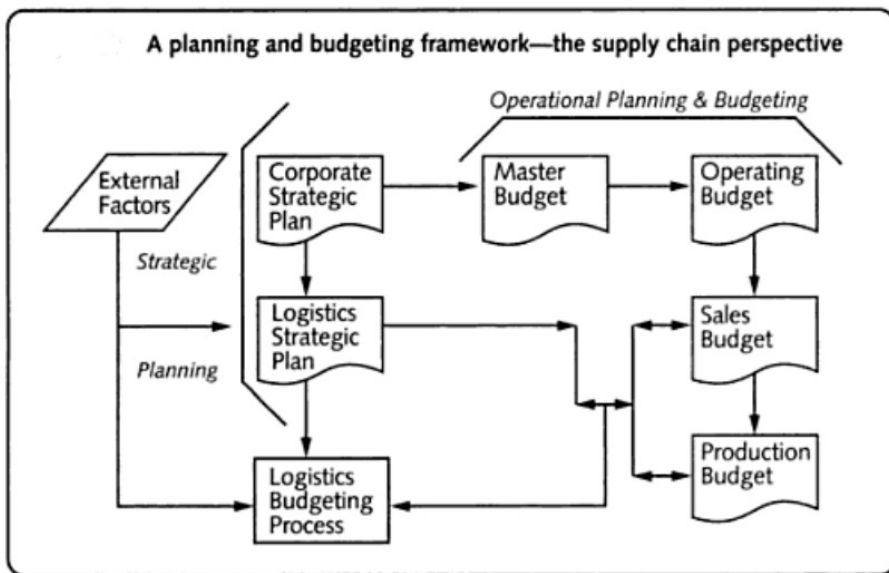


**Source:** *Tompkins, Harmelink, (2004).* The Supply Chain Handbook, *Tompkins Press, p. 58.*

As it can be observed from the Figure 1, the top management of the supply chain first defines the strategic direction, and then the long-term objectives on the basis of which determines the strategy for their implementation. These long-term objectives have to be decomposed to the series of the short-term goals. The budget is used as an instrument of strategic planning in order to quantify the short-term goals (Toit et al., 2007). In this process the management accounting has an important role primarily in the form

of providing adequate information support. The management accountants together with the management plan performances of the member enterprises, but the planning is also done at the level of the supply chain as a whole, it primarily starts from the past performances and expected changes in the future. The most obvious contribution of accountants in this process is reflected in the establishment of the standard operating costs. Based on the achievements of subordinated managers and comparisons with the expected financial and non-financial results, the management accountants determine the created deviations from the defined results, investigate the causes for that, which provides an informational basis for determination of corrective actions to be taken in the future. At the same time, on the basis of realization and planned activities that are projected the results for the upcoming period. The objectives of the budget can be summarized as follows (Bazley et al., 1999):

- The compel planning;
- Co-ordinate functions within an organization;
- Communication tool;
- Basis for responsibility accounting;
- Tool for resource allocation;
- Basis for a control mechanism;
- Motivate to employees.

As an instrument of management accounting, in practice, it is possible to apply different budgeting types – the strategic or the long-term budgeting, the operational or the short-term one, the "zero" budgeting, the fixed or flexible one, the activity-based budgeting, budgeting based on value, performance-based budgeting and other contemporary forms of budget. Their importance lies in the possibility to perceive customer needs, the potential market share of the enterprise, to identify the problems in the supply of raw materials and other inputs, to determine surpluses and shortages of labor, all of which should contribute to an improvement of the business efficiency. A series of partial budgets is necessary to be mutually harmonized and integrated into the master (main) budget which includes the business and financial implications of the planned activities for a defined period of time (Stevanović et al., 2008).

Because, as outlined before, the budget at the same time represents a diagnostic i.e. the control, but also an interactive mechanism for decision-making, in the master budget it arises often a challenge to be harmonized efficiency and effectiveness, the control and creativity, undertaken risks and consequences. Three elements that have a key influence on the behavior of management in the budgeting process include: difficulties to be reached the defined benchmarking, the degree of participation of all managers in defining the budget, as well as the relationship between the realized and planned performances (Camillus, 1986).

To accomplish this goal, the budget must be synchronized with the nature of the business activities of enterprise. This means that the time horizon of the budget necessary to

harmonize with duration of the operating cycle of the observed enterprise or supply chain. In the manufacturing enterprises this cycle usually lasts less than one year. An additional factor when choosing the time horizon is the degree of uncertainty that is present in the business environment of an enterprise. Higher uncertainty implies a shorter planning horizon in order to ensure a satisfactory degree of accuracy in planning (Camillus, 1986).

The connection between the strategy and strategic budgeting can be seen in the following examples (Dressler, 2004):

- If an enterprise pursues an innovation strategy and approaches revenue growth through new products, funding for R&D projects needs to be stronger than usual;
- If an enterprise choice an internationalization strategy with multiple market entries abroad, the funding for new marketing activities needs to be promoted;
- If a company drives a rigid cost leadership strategy, capital investments need to be monitored closely.

Strategic budgeting is focused on the realization of the strategic goals of an enterprise. Its essence consists of a selection of appropriate projects and programs by which the defined enterprise strategies have been implemented. As a result of the strategic budgeting occurs strategic budget (for the period of over five years) in which there have been presented the financial implications of appropriate strategic options (Janjić, 2011).

The strategic budgeting is a key instrument for realization of the cost leadership strategy and acquisition of the competitive advantage of the supply chain. Namely, in the modern business environment, in the efforts to win and maintain the market share and to improve the performance, in addition to the individual enterprises also mutually compete even the entire supply chains. The specificities of strategic budgeting are expressing in the following (Taylor, Rafai, 2003):

- Collecting of the preliminary budgets by the individual departments (of the member companies);
- Reducing the proposed budgets by a certain percentage, which has been defined by the top management of the supply chain;
- Aggregation of all savings in the budgets of individual members and their expression in the budget of the group;
- If some of the supply chain member needs additional capital, it is necessary that management of that member explains and justifies the requirements through discussion with the management of other members. The funds are available from the realized savings of other members in the form of so-called budget buffer.

The strategic budget as a rule has been prepared by the larger and more complex enterprises (including the supply chains) in order to be included in them the financial implications of the planned capital investments, investments into maintenance and expansion of existing facilities, developing of new markets, diversification of products

and processes (Stevanović et al., 2008).

Although essentially different, the strategic management and the budgeting are activities that are closely linked. Namely, they are aimed at achieving superior performance of the businesses subject or supply chain. In doing so, budgeting relates to the allocation of financial resources to the business units, activities and investments, projections of revenues and expenditures, examination of the projected capital expenditures. The task of strategic management is to determine the course of the supply chain activities, to identify strategies for market presentation and to organize internal activities i.e. the activities of the enterprises that are members of the chain. On the other hand, budgeting should enable the efficient allocation of financial resources and monitoring of achieved performances. Although the process of creating a strategy precedes the budgeting process, the efficient implementation of the strategy requires guidelines from the budget. Only in this way it will be enabled that realization of the objectives at the same time will be accompanied by improvement of the financial performances (Blumentritt, 2006). Namely, it is possible that excessive investments cause the financial stress, but also that financial conditions should be improved thanks to the future operations. Hence, as an imperative it appears a need for harmonization of strategic management and budgeting process.

In support of the previous assertions there are the proposals given by some authors that the process of strategic management and budget should be integrated. In fact, due to the turbulent business environment and errors that may arise in the case of the past data extrapolation, it is proposed the flexible budgeting, which respects even the expected changes. Integrating of strategic management and budget provides the ability to achieve projected performances, i.e. to simultaneously improve the financial and strategic supply chain performances. In addition, the strategic performances related to the implementation of goals such as winning new clients, introducing new products and services, improving the business efficiency. The financial performances comprise the financial aspects of the business such as revenue growth, margins, return on investments (Golsby-Smith, 2011).

Linkage of strategic management and budget can be shown through the following series of steps (Drury, 2008):

1. Defining the objectives of the supply chain as a whole;

2. Identifying the potential courses of action (i.e. strategies);

3. Evaluation of strategic options;

4. The choice of an alternative course of action;

5. Implementation of the long-term plan in the form of an annual budget;

6. Monitoring of the achieved results;

7. Taking over the corrective activities in case of significant deviation of the achieved results.

The first four steps are related to the long-term planning, while the remaining three activities are under the jurisdiction of the annual budgeting process.

The previous arguments clearly show the importance of including financial managers in the process of the supply chain planning and budgeting. In fact, their role is not only in the financial, accounting and business activities, but they are expected to provide a holistic view of the organization. In order to ensure a strategic and competitive advantages of the supply chain, the financial management should contribute that the goals of the organization should be focused towards the creation of the economic value added – EVA. This will allow that an appropriate course of action should be chosen, to be improved the efficiency and effectiveness of operations. Based on the analysis of historical performances, the financial manager will be able to gain insight into the future details such as projected revenues and costs, gross margin etc. (Ramachandran, 2012).

The supply chain management makes decisions about the use of available resources of its members and directly affects their financial results. Hence, it is important to consider the effects of the respective decisions on financial targets and related indicators of the enterprise. Decisions made on the level of the supply chain directly affect revenues (time of introduction a new product on the market, timeliness of delivery, quality of product, return of the product), the production costs (transportation costs, costs of inventory management, number of suppliers, packaging, waste) as well as the overhead administrative and sales costs of particular members - the costs of guarantees, costs of sales, costs of documentation, control of the exchange rate etc. (Visner, 2010).

In order to perceive the effectiveness and efficiency of activities within a supply chain, it is necessary to measure its performances. Measuring primarily aims to establish a deviation from the defined benchmarking. Namely, in the process of budgeting the management defines the target size, while by measuring there have been determined the positive and negative deviations that provide valuable information for the future decisions and actions. The performance of the supply chain operations that are monitored can be qualitative and quantitative; they can then have a cost and non-cost character, the strategic, operational and tactical focus. When it comes to the cost performance indicators, they relate to the costs of distribution, costs of the stock shortages, the costs of used resources, time of production, the number of timely deliveries etc. (Ghosh et al., 2014).

The system of remuneration of management on the basis of the savings realized through strategic budgeting contributes to efforts aiming at reducing the costs should be realized through the permanent review of processes and activities in the enterprise, reducing of waste and increasing of efficiency. This can directly improve the financial but also the environmental performances of the supply chain.

According to Kurien and Quereshi (2011) the measuring of the supply chain performances should be based on three pillars:

- Measuring of resources (total costs, inventory level, the need for personnel, engaged equipment, consumed energy, costs);

- Measuring the output refers to the quality and quantity of final products and the reaction of customers;

- Measuring of flexibility refers to the ability to adjust the volume and delivery schedules fluctuations, which are determined by suppliers, manufacturers and customers.

It is of particular importance that the budget fits into the broader financial plan of the supply chain, in order to be achieved the defined financial targets and deadlines for their achievement.

## Challenges of Budgeting in the Agribusiness Supply Chain

As already pointed out, budgeting is the process of designing business for the coming period. In this process it has been often started from the past events and achievements that have been then adjusted in accordance with the dynamics of the business environment and forecasts of the management. What is observed in recent years is that business conditions are becoming increasingly complex, while the changes increasingly turbulent. In this regard, the challenges anticipated for agribusiness sector are moving in the following direction (Boehlje, Roucan-Kaneb, Bröring, 2011):

- Increased risk and uncertainty of the business environment;

- The development and adoption of new technologies and innovation is the key for the business success;

- The timely response to the changes in the industrial structure and actions of the competing enterprises and supply chains represents the precondition for maintaining and increase of the market share.

In recent years, risk and uncertainty are expressed to such an extent that they gain strategic importance for business. Exposure to the risk and uncertainty can occur based on the events that could cause the disruption of business and lead to the loss of the key personnel. Therefore in modern business conditions, a special attention must be paid to the diffusion of knowledge at the organizational level as well as to the creation of "the learning organization". The adoption and application of knowledge as well as an innovative thinking could replace limitations of certain resources and enable "to achieve more with less (inputs)". The enterprises and supply chains mutually compete by knowledge, and not by products, which means that progress can be achieved only with continuous learning (Vasiljević, Savić, 2013).

In the area of financing, there is the risk of rising interest rates and a high level of indebtedness, which could jeopardize the liquidity and solvency not only of the member enterprise, but also of the entire supply chain. Furthermore, unfavorable market conditions may generate exposure on the basis of pressure in the area of sales prices due to the approval of the discount by the competition, enlarging of customers and strengthening of their bargaining power. In the area of technology, the risk appears due to the fact that the provision of modern technologies requires significant capital expenditures, while on the other side the commercialization of new products takes place relatively slowly, which leads to the conclusion that for the capitalization of advantages

it is necessary a longer time horizon, but in addition the significant liquidity reserves for the smoothly progress of business (Boehlje, Roucan-Kaneb, Bröring, 2011).

Efficient supply chain management begins with planning of the product life cycle and continues by planning of inputs' delivery by the suppliers, by the product planning, territorial distribution and management of retail stores, delivering of invoices to the customers and their payments. In this process a central place among the business functions belongs to the production. Therefore, the most significant is making of the production budget, which has to be based on the sales plan. In other words, all value channels start with conversion of inputs and components throughout the process of production into the final products. The starting premise of this process undoubtedly makes an appropriate choice of technical and technological equipment of the enterprise-producer as equipment and technology determine parameters such as the size of the enterprise capacity, the amount of the costs, the product quality, the time cycle and limits. In addition, production for the well-known customer demands abandoning the traditional approach, which is characterized by the production for the warehouse and introduction of so-called *Lean concept*, *Just-in-time* inventory management system, which in turn require a high level of collaboration in the supply chain, the effective management of orders, timely deliveries and high level of customers' satisfaction (Ross, 2011).

Additional problems in the agribusiness sector can arise if there is a high degree of dependence on individual suppliers, which not only reduces the bargaining power, but it appears even the risk of exposure to the rising input costs. Hence the goal of establishing the supply chain just to overcome such unfavorable effects. However, the areas where arise the systematic risks which cannot be diversified are the political situation and regulations, which are manifested in the form of the changes in legislation that may impose additional restrictions in the business, then the changes in the tax policy, the introduction of rigorous environmental regulations and alike.

In addition to the structural changes of the business environment that make the implementation of the budget extremely complex, certain challenges are directly linked with the budget creating procedure itself. Hence, those elements must be respected through their assessment, evaluation and testing of the effects from the budgeting process and the planned figures. These are events such as changes in selling and purchasing prices, defining of the transfer prices, and the appearance of inflation and exchange rate changes.

The dynamics of the business environment has been followed by the price dynamics as well. The price war that has been waged by the enterprises and supply chains in order to regain the customers, imposes challenges in the budgeting process. Because of the mentioned variability in the agricultural products' prices on the one hand and the food products' prices on the other hand, it is necessary to design several scenarios for different levels of costs and selling prices, so that in the short term could be made the necessary corrections and supplements to the budget.

Other important aspects of budgeting in the supply chain are the transfer prices. Namely, they affect the profitability of different forms of foreign business operations in the global supply chain. Although it is the price at which there are exchanged the goods and services within the supply chain, from the point of view of the individual enterprise it represents an uncontrollable variable, while at a higher hierarchical level it is controlled item. The issue of transfer prices represents an element that has been determined by headquarters of the supply chain, while they have been actualized by the accounting. Through the transfer prices there could be performed managing and structuring of transactions between members of the supply chain, also it could be affected the level of the resources' costs and allocation of profit between the members. When budgeting in an international environment, the transfer prices can provide numerous benefits to the enterprises members of the chain in the form of tax relief through the overflow of profits in the countries in which there are applied the lower tax rates, lower custom duties, avoiding of exchange rate control in the case of profit repatriation, etc. (Seppala, Kenney, Ali-Yrkko, 2014).

A significant challenge for the supply chains that operate in a global environment represents the change in the exchange rate since it causes three forms of exposure: *translation exposure*, *transaction exposure,* as well as the *economic exposure*. *Translation exposure* affects the financial statements during development of the budget. Namely, during the budgeting, the management starts from the expected future value of the exchange rate. Any deviation from the expected exchange rate directly affects the level of realized performances. This is because any change in the exchange rate requires adjustments in the policy of selling prices both in the domestic and foreign markets, as well as their reduction or increase, which further has implications on the volume of realized sales. However, apart from the selling prices' changes, with the change of exchange rate they are also changing the purchasing prices, i.e. the input prices, which directly affect the business results. Hence, in such circumstances it should be considered the switching from the foreign suppliers to the domestic ones, when it is possible, in order to provide lower input prices. The *transaction exposure* stems from the transactions with the foreign business subjects (such as unhedged contracted cash flows), repatriation of profits, as well as an acquisition and sales of foreign assets. In conditions when the cash flow from abroad is significant, it is recommended to draw up a special cash flow budget that will be generated abroad. Finally, *economic exposure* stems from variations of uncontracted cash flows due to changes in exchange rate. The importance of the economic exposure from the standpoint of budgeting refers to the fact that with the exchange rate changes it is necessary to make the harmonization of marketing strategy in terms of the price policy, market segmentation, promotional activities, set of the sales strategies (Rivera, Milani, 2011).

Previous paragraphs speak in favor of a flexible approach to budgeting in order to take into account trends and future developments, as well as circumstances that have implications for the market position, flexibility and competitiveness of supply chains. This is because the different lines of production are characterized by different time

horizon. Differences exist not only between plant and animal production, but also within them, e.g. within the plant production the distinction should be made between say fruit and crop products. The differences are primarily caused by the level of necessary investments, the required equipment, the type of production (extensive vs. intensive one), territory on which the production takes place, the climatic conditions and other factors. Their comprehensive consideration and appreciation should result in establishment of realistic budgets, their more complete realization and improvement of the business efficiency. The final objective of these efforts is the maximization of the created value for customers and other stakeholders including the owners.

## Conclusion

The principal motives for establishment of the supply chains are contained in the efforts to realize the opportunities in the environment, to minimize unfavorable effects based on the numerous risks and to improve the competitive position of all member enterprises. These benefits are contained in the following: reducing of risk in transportation and storage, in an increased sales, in providing access to the modern technologies, capital and specialized knowledge, in a better flow of information about product' flows and developments in the market, in the more effective quality control and product safety, in the sharing of risk between the partners, in an increase of revenues and profits, and finally, in a greater sum of totally created value.

The process of budgeting is seen as a strategic instrument for the acquisition and maintenance of competitive advantages both of enterprises and entire supply chains. The budget as a direct result of this process represents the plan of business activities for a defined period of time. The top management of the supply chain first defines a strategic direction, and then the long-term objectives on the basis of which determines the strategy for their implementation. Through the budget, the cited long-term goals have been broken down into a series of objectives. In practice, it is possible to apply different types of budgeting - strategic or long-term, operational or short-term, "zero" budgeting, fixed or flexible, activity-based budgeting, value-based budgeting, performance-based budgeting and other contemporary forms of budget. Their importance lies in the possibility to perceive customers' needs, potential market share of the enterprise, to identify the problems in the supply of raw materials and other inputs, to identify the labor surpluses and shortages, which all together should contribute to an improvement of the business efficiency.

To accomplish its goal, the budget must be synchronized with the nature of the enterprise business activities and the supply chain. This means that the time horizon of the budget is necessary to be aligned with duration of the operating cycle. The strategic budgeting represents a key instrument for realization of the cost leadership strategy and gaining of the supply chain competitive advantage. Namely, in the modern business environment, in the efforts to win and maintain the market share and to improve the performances, there are competing not only individual enterprises but the entire supply chains. The strategic budget has been usually prepared with an aim to include the

financial implications of the planned capital investments, investments in maintenance and expansion of existing facilities, development of the new markets, diversification of products and processes. The advantages of strategic budgeting reflected in the relatively simple implementation, improved communication between members of the supply chain, the lower level of total spending and a significant reduction of costs. Those efforts towards reduction of costs do not compromise the quality or quantity of production, since the savings have been achieved by those members where this is possible, and such released funds are given at disposal to those members that have justified needs for additional capital.

In order to perceive the effectiveness and efficiency of activities within a supply chain, it is necessary to measure its performances. Measuring of performances primarily aims to determine deviations from the planned results. By measuring they are determined the positive and negative discrepancies that provide valuable information for future decisions and actions.

The challenges of budgeting in the agribusiness supply chain are resulting both from the structural changes and certain monetary phenomena such as inflation, changes in interest rates, changes in exchange rates and the associated price fluctuations.

The high degree of coordination and collaboration between the members of the supply chain should contribute to the establishment of realistic budgets, their successful implementation, then to the achievement of the cost leadership as well as to the creation of greater value and achievement of the competitive advantages.

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# ULOGA I ZNAČAJ STRATEGIJSKOG BUDŽETIRANJA ZA KONKURENTNOST AGROBIZNIS LANACA SNABDEVANJA

*Bojan Savić[5], Zorica Vasiljević[6], Nikola Popović[7]*

## Sažetak

*Rapidni izazovi i promene koje su sastavni deo poslovnog ambijenta zahtevaju da preduzeća pažljivo planiraju svoje poslovanje, kao i da procene verovatnoću nastanka i ishod budućih događaja. Značaj navedenog pristupa još više dolazi do izražaja u domenu agrosektora koji, uz brojne specifičnosti i ograničenja svojstvena samoj poljoprivrednoj delatnosti, odlikuju i sve nepovoljniji uslovi poslovanja. Reč je pre svega o rastućim troškovima poslovanja s jedne i nesrazmerne promene u visini prodajnih cena poljoprivrednih proizvoda na drugoj strani. Preduzeća formiraju lanac snabdevanja kako bi redukovala rizik i neizvesnost, realizovala proizvodnju kvalitetnih proizvoda po konkurentnim cenama, očuvala i povećala tržišno učešće. Realizacija tako složenih ciljeva zahteva adekvatan pristup procesu budžetiranja. Cilj rada je da osvetli značaj, domete i izazove budžetiranja kao instrumenta upravljačkog računovodstva i strategijskog budžeta za potrebe podrške menadžmentu u naporima sticanja i unapređenja konkurentnosti čitavog lanca snabdevanja.*

**Ključne reči:** *upravljačko računovodstvo, strategijski budžet, lanac podrške, agrobiznis sektor, konkurentnost.*

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# BRAZIL AND CHINA: AN ASSESSMENT OF RECENT TRADE RELATIONS

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## Summary

*The aim of this paper is to analyze Brazil/China trade relations over the twenty-first century, highlighting the performance and composition of exports and imports, as well as developments in the relative importance of China for Brazil in this field. Assuming this trade relationship as an important part of a strategic partnership of these countries, the main conclusions are: (a) there was a significant increase in the Brazil/China trade in the period, which substantially raised China's relative share in the Brazilian foreign trade; (b) despite of this feature, the dynamics of the evolution of exports is fundamentally different from that presented by imports, which requires greater Brazilian assessment for managing the commercial policy of the country.*

***Key words:*** *Brazil, China, Foreign trade.*

***JEL:*** *F140, F100; Q17.*

## Introduction

Since the announcement in May 2004 (*This announcement was made in the context of the visit of President Luiz Inacio Lula da Silva to China* )of the strategic nature of the relations Brazil - China, a series of axioms have been launched to describe this relationship. One could observe some experts warning about the risks of the Brazilian exposure to competition of China and some others who feel it a great "window of opportunity" to Brazil's development path. The big issue is the level of internal complexities of the two countries, as well as the complexity of the international situation after the crisis of 2008 (not properly placed in this calculation). Or are poorly calculated. In this sense to nominate the relations between the two countries as "strategic" is still the best way to quantify the importance of exchanges at all levels occurring between Brazil and China.

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Strategy should be analyzed as a category that permeates all branches of the social **sciences and particularly economics. There are strategic relationships when one** realizes the communion of similar visions of the world. In this case, from the opposition to the international financial order to the vision of the terms of trade imposed by major international organizations, as the World Trade Organization (WTO). These are visions of the world built over different historical processes by which the two countries passed at same historical time with their own geopolitical and economic importance. Brazil's national development experience certainly served as a parameter to the very implementation of China's economic reforms in 1978. The Chinese new process is almost an anchor of inspiration of Brazilian thinkers of the developmental field. In addition, China's rise is the fundamental unit of analysis to examine the future of international relations, Latin America and Brazil itself.

The study of trade relations must bear a necessary practical consequence of options in trade policy made by both countries in the 1990s Orthodox evidence tend to emphasize "comparative advantages" properly harnessed for our country. Developmental visions run the risk of not understanding the background the ongoing transition in the world and the intense participation of Brazil in it, incurring the effect "structure" when it comes to de-industrialization resulting from this "relationship". The first analysis errs on the primarism of the belief in a development resulting from this vision. The second is correct in essence, but commits the same neoclassical mistake putting the economics in primary position comparing to the politics.

Moreover, the abstraction allows to reach the strategic element of the relationship. Both countries have increased the degree of mutual importance. The effect of Chinese "demand" allowed Brazil to implement a broad set of domestic social policies with success between 2004 and 2010. In addition, one must observe the formation of a large foreign exchange reserves which permitted the country to drop domestic interest rates and helped to deal better with the international economic instability. The increase in Chinese investments in Brazil indicates both an alternative for external financing as one preferential market to absorb part of its excess productive capacity. Clearly the contradictions are placed and are inevitable. Similarly it is unlikely the return of Brazil to external financing conditions applied under the IMF and World Bank. Just as the very chronic demand crisis in the North Atlantic countries will condition us to an ever closer relationship with the Asian giant, regardless of the fall in commodity prices.

How Brazil should behave facing the inexorability of this relationship? This question will not be the object of this article as a whole. The proposal of this paper is to describe the degree of importance of China to Brazil, based empirically on data from the trade relations. Thus, the next section analyzes Brazil/China trade relations with regard to the import and export flows of goods and services, the relative share of trade with China and the qualification of the trade in terms of traded products. Then, in the final section, we listed the main conclusions of the analysis.

## Brazil/ China trade relations: recent evolution

Brazilian foreign trade has presented a strong growth along the twenty-first century, particularly from 2002/3. As shown in Figure 1 and 2, in 2012 both exports and imports were about five times higher than at the beginning of the decade, when it began to lose steam, dropping to a lower level - but still much higher than in 2000. Thus , bilateral trade has grown significantly in the period. This performance is in large part the result of the evolution of international commodity prices, whose growth was significant until 2012/3, starting a reverse trajectory thereafter.

**Figure 1.** Brazil - Exports and Imports (2000-2015) - US$Billions
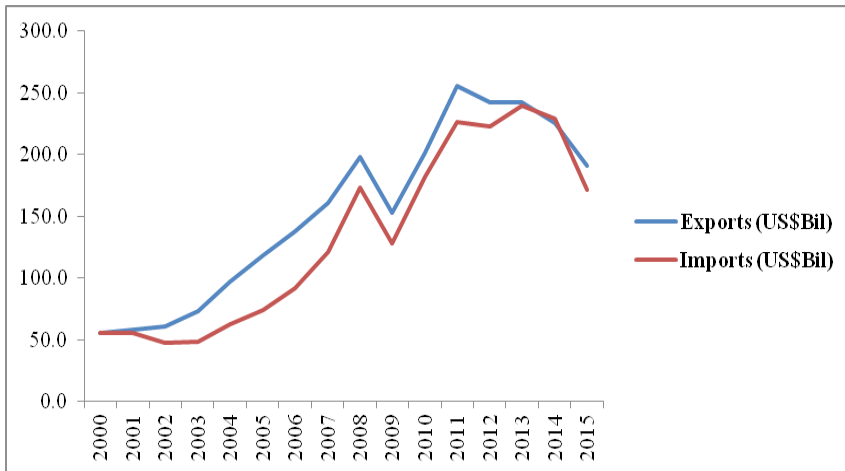


*Source: MDIC/Brazil*

**Figure 2.** Brazil - Total Trade (2000-2015) - US$Billions
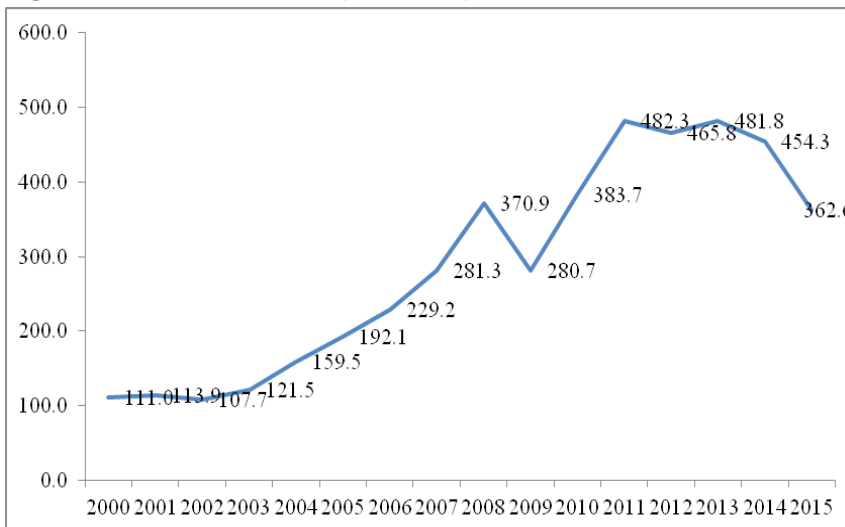


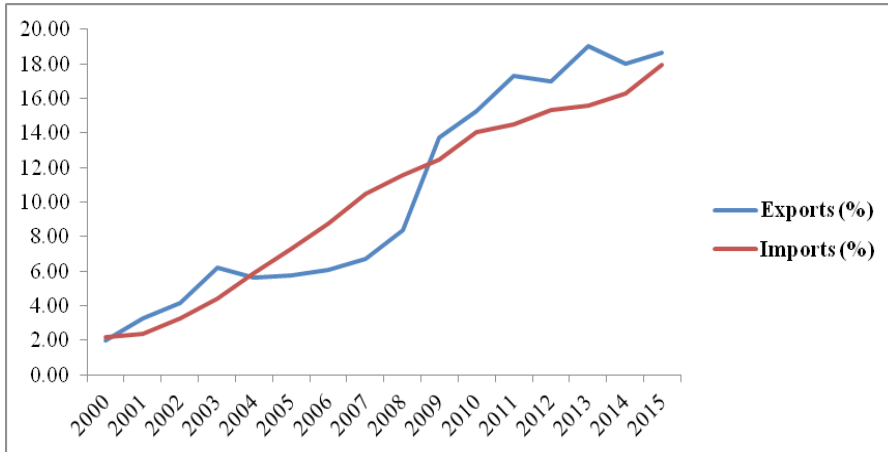*Source: MDIC/Brazil*

In spite of the simultaneous growth of exports and imports, exports from Brazil showed a faster pace than that of purchases, resulting in a significant increase in the trade surplus. Figure 3 clearly shows this. From a deficit in 2000 of 0.7 billion dollars, it turns into a trade surplus of 46.5 billion dollars in 2007, falling from then mainly due to the effects of the economic crisis the North Atlantic started in 2008.

**Figure 3.** Brazil - Trade Balance (2000-2015) - US$Billions
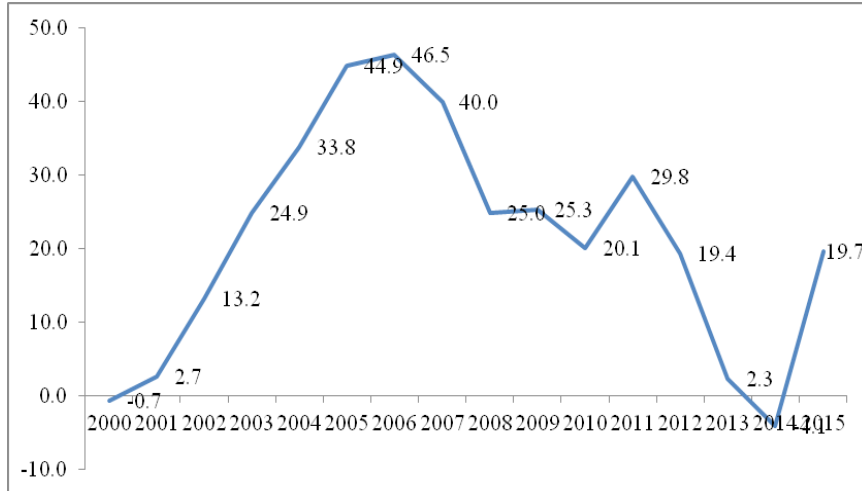


*Source: MDIC/Brazil*

Trade relations between Brazil and China is a key element to understand the Brazilian foreign trade behavior in the twenty-first century. According to the figures 4 and 5, from a insignificant level of sales and foreign purchases of both countries in 2000, they reached around 40 billion dollars a year over the period 2011/13 (bilateral trade records 83.3 billion in 2013), highlighting mainly the increase in exports, which were worth about 45 billion dollars in 2011.

**Figure 4.** Brazil X China - Exports and Imports (2000-2015) - US$Billions
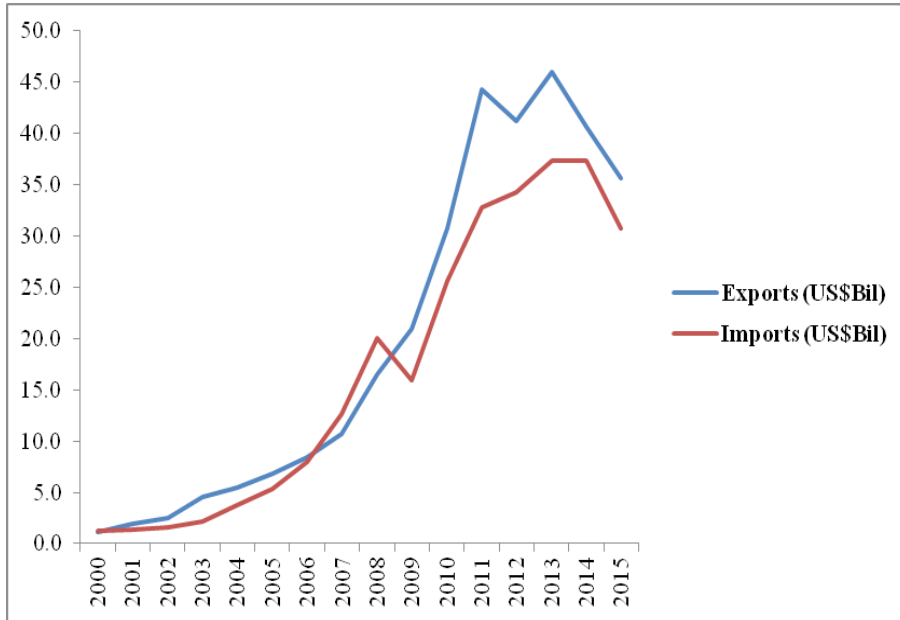


*Source: MDIC/Brazil*

Figure 5 - Brazil X China - Total Trade (2000-2015) - US$Billions
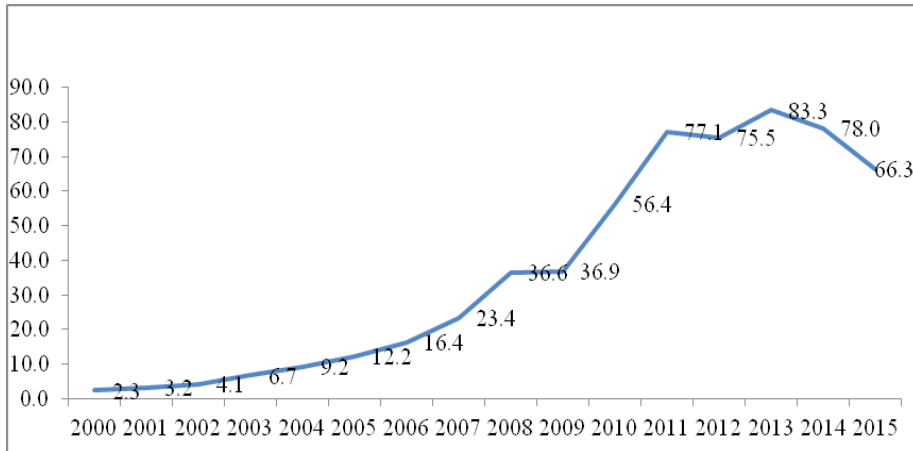


*Source: MDIC/Brazil*

As a result of this scenario, China's relative share in Brazilian foreign trade, of only 2% in 2000 reaches close to 20% in 2015, making China the main Brazilian trade partner - see Figure 6. Important to note that the strengthening of trade relations of the two countries recorded a continuous path of increase since 2000. To a great extent, this behavior is determined, in addition of the continued and strong pace of growth of the Chinese economy since the 1980s, for the most strategic approach of China with emerging markets in Latin America and Africa.

In Brazil, not only trade relations were impacted significantly, but there was simultaneously a relevant increase of Chinese capital flows, especially FDI (Foreign Direct Investment).

**Figure 6.** China's Relative Share in Brazilian Trade Evolution (2000-2015) - Imports and Exports



*Source: MDIC/Brazil*

This change in the volume and share of China's trade with Brazil determined important effects for its assessment - along with obviously positive aspects, some issues deserve a more refined analysis for the definition of Brazil's trade policy objectives. First, it should be noted the maintenance, over the twenty-first century, of a positive trade balance between 2000 and 2015 - only on the sharpest years of the international financial crisis (2008/9) one could observe a deficit on record relationship with China - see Figure 7. the rapid and strong growth of exports exceeds the growth trend of imports, even with a similar rapid increase dynamics in the purchases of Chinese goods.

**Figure 7.** Brazil X China - Trade Balance (2000-2015) - US$Billions
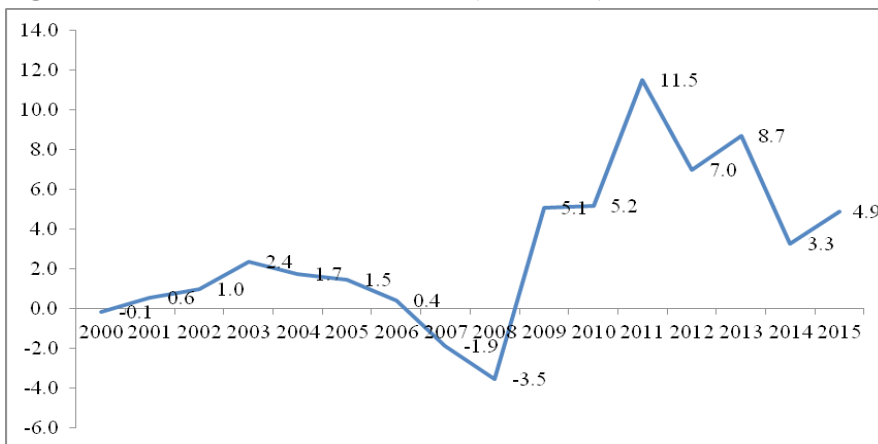


*Source: MDIC/Brazil*

Second, the composition of trade shows a major weakness of the Brazilian participation. As shown in Figure 8, Brazilian exports to China are clearly concentrated in primary products, which determines a strong dependence on the evolution of international commodity prices. Not surprisingly, therefore, the Brazilian trade surplus predominates and increased between 2003 and 2013 (except for 2008/9 as previously advised). In this period, commodity prices observed considerable rise, even for the maintenance of strong growth of the Chinese economy. From 2013/14, with a reduction of the annual rates of growth of China's GDP and consequent reduction in demand for raw materials in the international market, prices began to fall and the effects were rapid and costly for the Brazilian economy.

**Figure 8.** Brazilian Exports to China - Primary and Industrialized
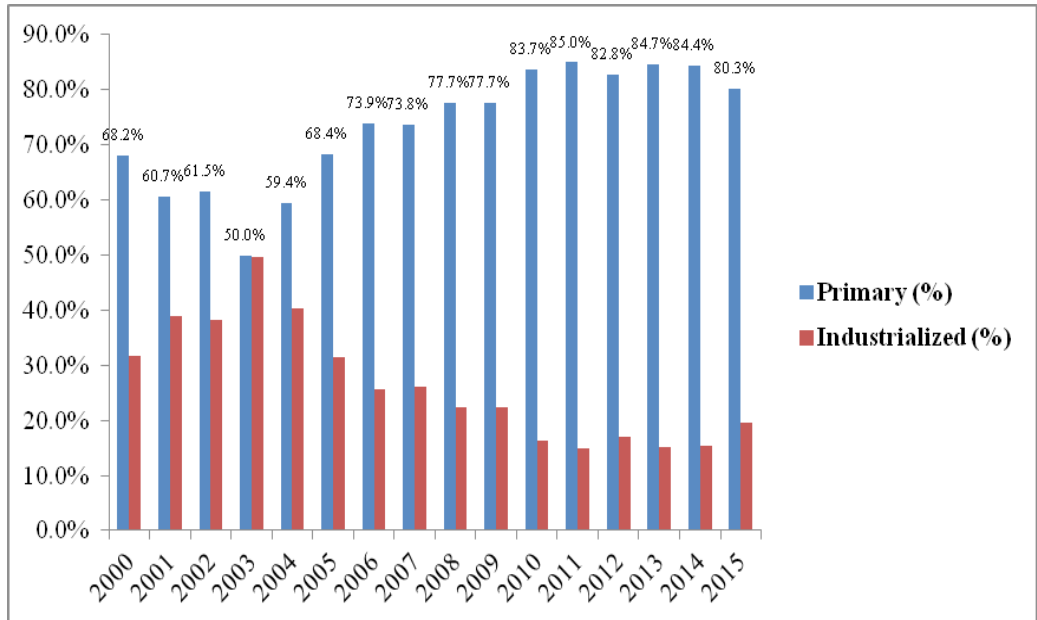


*Source: MDIC/Brazil*

Brazilian imports of Chinese products, in contrast, are practically composed by manufactured goods, which ensures a more stable trajectory and it apppears less dependent on price developments. Thus, even with the recession of 2014/15, the external purchases of products from China was maintained without significant inflexion in the pace of growth - see Figures 9 and 6.

**Figure 9.** Brazilian Imports from China - Primary and Industrialized
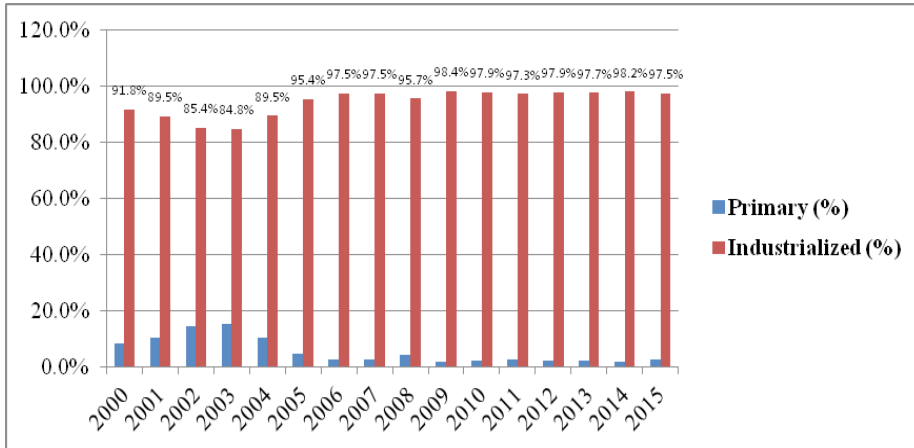


*Source: MDIC/Brazil*

Third, and closely linked to the previous argument, the list of major products exported and imported shows quite distinct dynamics. With regard to exports, the one hundred main products account for almost all sales (about 98% of total exports to China). Only the top three products (soya, iron ore and oil) amounted to about 80% in 2014 and 70% in 2015 - see table 1. It appears, therefore, that there is a high concentration of sales in a very small number of goods, determining a clear and potentially dangerous dependence behavior (production and prices) of these goods.

At the same time, imports are much more diversified - the hundred main items include only about 40% of total imports. In addition, the top ten imported goods by Brazil (all manufactured, with medium/high intensity of technology, amounted to only 14.4% of the total in 2014 and 18% in 2015, mainly represented by parts of telephone, TVs and radios, ships, cell phones, trains, machinery and computer parts- see table 2.

### Final remarks

Trade relations between Brazil and China shows strong growth in the twenty-first century, both with regard to imports and exports. Considering the increasingly strategic nature of this relationship, this development is an important part of a larger set of variables necessarily linked to the analysis. That includes foreign direct investment, trade and joint development strategies, particularly in the context of the BRICS, and the increasingly clear attempt at giving a new shape to the international economic order.

Thus, Brazil's trade policy should be aware to the increasing importance of China for Foreign Trade of Brazil. However, it should be put in the balance the need for possible stimulus for a future relationship more balanced and stable, taking into account the marked differences in the structure of exports and imports addressed in this article. The road is long, but glimpsed opportunities are plenty and rich in potential for both countries.

**Table 1** - Exports to China - Main Products

| Products | 2015 | | | 2014 | | |
|---|---|---|---|---|---|---|
| Exports | Value | % | Wheight | Value | % | Wheight |
| Soya Bean | 15.787.785.730 | 44,3% | 40.925.506.994 | 16.615.105.360 | 40,9% | 32.664.301.940 |
| Iron | 5.749.581.730 | 16,1% | 175.738.915.274 | 11.744.118.112 | 28,9% | 174.877.232.363 |
| Oil | 4.138.635.289 | 11,6% | 13.156.458.926 | 3.472.942.587 | 8,6% | 5.576.295.192 |
| Woood | 1.645.642.350 | 4,6% | 3.471.477.810 | 1.424.041.355 | 3,5% | 3.061.138.471 |
| Sugar | 754.512.638 | 2,1% | 2.480.981.679 | 875.853.017 | 2,2% | 2.271.547.258 |
| Iron for pelleting process | 702.692.840 | 2,0% | 9.492.090.458 | 327.272.226 | 0,8% | 3.309.715.898 |
| Chiken parts | 607.659.787 | 1,7% | 307.042.267 | 518.794.388 | 1,3% | 227.547.819 |
| Copper cathodes | 558.241.178 | 1,6% | 102.190.711 | 252.023.199 | 0,6% | 35.699.716 |
| Meat | 476.390.658 | 1,3% | 97.477.920 | 455.577 | 0,0% | 105.563 |
| Oil plataforms | 394.180.887 | 1,1% | 53.701.770 | | 0,0% | |

*Source: MDIC/Brazil*

**Table 2.** Imports from China - Main Products

| Products | 2015 | | | 2014 | | |
|---|---|---|---|---|---|---|
| | Value | % | Wheight | Value | % | Wheight |
| Telephone parts | 1.261.003.015 | 4,1% | 5.972.282 | 1.460.822.946 | 3,9% | 6.621.211 |
| Tv and radio parts | 1.185.835.691 | 3,9% | 46.261.362 | 1.397.065.698 | 3,7% | 55.764.164 |
| Ships | 947.736.499 | 3,1% | 171.768.260 | 379.014.904 | 1,0% | 113.680 |
| Cell phones | 370.370.454 | 1,2% | 812.713 | 537.532.064 | 1,4% | 1.780.552 |
| Trains | 360.406.496 | 1,2% | 12.790.927 | 139.352.726 | 0,4% | 4.538.891 |
| Machinery | 308.843.050 | 1,0% | 22.372.235 | 200.784.214 | 0,5% | 10.664.304 |
| Computer parts | 288.418.732 | 0,9% | 288.224 | 194.394.815 | 0,5% | 338.528 |
| Air conditioner | 284.617.910 | 0,9% | 50.676.714 | 360.282.417 | 1,0% | 69.041.778 |
| Fertilizers | 280.650.787 | 0,9% | 733.220.286 | 298.188.864 | 0,8% | 824.136.680 |
| Computer monitors | 248.295.602 | 0,8% | 2.862.010 | 417.895.694 | 1,1% | 5.068.816 |

*Source: MDIC/Brazil*

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# IMPACT OF TOURISM ON ROUNDABOUT OF ECONOMIC PROCESS

*Slavoljub Vujović*[1]*, Nikola Ćurčić*[2]*, Vuk Miletić*[3]

## Summary

*The relation between of production and consumption units, market mechanisms, and the behaviour of economic subjects in the market are aspects that enable an understanding of tourism in the economic process.*

*Two basic factors of tourism "free time and free money" as the goal of creation of each individual, striving to meet the needs for luxury, rest, rehabilitation and recreation, are directly linked to the basic economic relationship, the relationship between limited resources and unlimited needs. Not respecting the principles and rules of the socio-economic sphere, by the dynamics of the development of techno-economic sphere, the increasing difference between the poor majority and rich minority in the world, causing many economic and social problems. Given the economic problems on a global level, further directions of development of tourism should be sought through the analysis of the relationship, or better to say, interdependence of development of techno-economic and socio-economic spheres. This paper seeks to determine and clarify the importance of tourism as a factor stimulating circular flow of economic processes.*

*Key words: tourism, economics, development, economy.*

**JEL:** *Q11, Q17, Z32.*

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## Introduction

The expansion of economic and a number of other related problems, reflected through the prism of finances in developed economies, is becoming wider and wider, flooding other less developed economies with the same problems, thus creating all the bigger gap between the rich and the poor. A specific role of tourism in the context of an economic process is to absorb, alleviate and solve in a specific manner a number of economic problems with its influences in an economic process and constant incentives to production and consumption units.

These problems are connected with a demographic factor (the number of inhabitants, an uneven population, birth rates, etc.), natural resources (the amount, the relation of man towards resources and exploitation), energy and food, the control and distribution of national income, and up to the fundamental flows of an economic process.

The influence of tourism (foreign) on the balance of payments and GDP (gross domestic product) overflow between certain economies of the world is especially significant. One of particularities of tourism is that the functioning of tourist supply and demand leads to the overflow of personal incomes from one country into the other, without any agreements between governments, without international conventions, declarations and etc.

So, the mechanisms of tourist supply and demand enable the export of material and immaterial values at home, without formal procedures of packing, customs procedures, shipping, and other foreign trade procedures. It is especially interesting to mention the export of immaterial values at home, those which cannot be packed (adventures, spiritual and emotional feelings, and all those values which make the timeless heritage of oral tradition of a people), standardized and sold like other products and services (Guzina, 2009).

However, if all financial power centers, financial institutions and the latest technologies are in the developed economies of the world, this raises the question of the causes of economic crises and why financial problems occur in these economies. Is the concept of neoliberal capitalism the leading problem and how does it affect global tourist flows?

All powerful alliances and world bloc divisions (it refers primarily to the NATO and EU) on a planetary level seek a solution for economic problems, in the sense of creating new markets. They strive to solve the sales problem, as one of the central problems of developed countries. It is not a problem for developed economies to produce anything, the problem is where and how to sell it.

Large corporations have imposed a completely new concept of the regulation of socio-economic relations, the so called "corporatocracy".

The essence of "corporatocracy" is that large corporations – their leaders – or rather financial politicians, dictate tasks to politicians in government structures, how to project legislative and legal framework, what policies to lead, where to initiate wars etc., and all with the aim of enormously increasing their own financial capital.

However, even the corporatocracy has problems, because being the engine of neoliberal capitalism it leads to the collapse of basic economic postulates, to the creation of a bigger and bigger gap between a techno-economic and socio-economic sphere, and to a bigger and bigger gap between the poor and the rich, to the collapse of the functioning of labour market mechanisms and goods and services market mechanisms, to the disrespect of basic human rights etc. It leads to the collapse of the constitutional and legal order, and in this way to the malfunctioning of the systems for the control of creation and distribution of newly created values. The inadequate system of primary and secondary distribution represents a special problem.

In addition to his claim, which he expressed on the summit in Lindau, that the accelerated increase of the gap between the rich and the poor, which was in those days turning into a burning issue, would have enormous economic consequences, the famous Nobel prize winner Joseph Stiglitz (the chief economist of the World bank from 1997 to 2000) cited the data that 95% of the USA national income went into the pocket of only one per cent of people, that average salaries were lower than a quarter-century before, that the rich were becoming richer, and the poor were becoming poorer, and the same situation was in many other countries.

The key factor lay, as Stiglitz cited, in the fact that it had not been invested enough in the informing of the widest population, who still believed in fallacies such as the American dream about a man who started his career as a dish washer and then the arduous work led him to the status of a millionaire. When it comes to the economy of the European continent, Stiglitz cited that wealth divisions on the old continent were less uneven than in the USA, thanks to the strong middle class in Germany and Scandinavia. In the other part of Europe the disproportion was much bigger. It was also interesting that the American trend of development disproportion and wealth distribution was closely followed by China. "In its economy, which is in vertiginous ascent, 95% of its wealth is concentrated in the hands of barely 5% of people" (Stiglitz, 2014).

With no intention to disprove the attitude of Stiglitz, we believe that economic poverty is a bigger problem than the problem of informing the widest population who, as he cited *"still believes in fallacies, such as the American dream about a man who starts his career as a dish washer, and then the arduous work leads him to the status of a millionaire"*.

However, apart from all above mentioned problems, tourism, globally observed, has a positive growth rate. As well as other sectors on a global level, tourism has also felt the pressure of the global economic crisis. The world economic situation after 2007/2008 has put additional pressure on the psychophysical state of people and their health. People more often seek new ways of having a holiday and relaxation. Due to the economic crisis some forms of tourism, on a global level, are slowed down, however, the tourist sector on the whole has been in an extremely good position over the last two or three years offering new models of tourism, such as Wellness tourism (Koncul, 2012). If a certain destination, zone or region possesses quality inorganic, organic and anthropogenic elements, tourism is certainly an activity which enables

its economic development and more efficient inclusion in the international division of labour (Vujović, 2011).

Tourism is directly incorporated in three out of four (extractive industry, agriculture, processing industry and traffic) basic areas of material production – *traffic, processing industry and agriculture*.

"Apart from extractive industry, agriculture and processing industry, there is also the fourth area of material production, which also goes through diverse stages of craft, manufacturing and mechanical work – it is transport industry (Locomotion industry) whether it transports people or goods" (Marx, 1978).

According to above mentioned attitudes, it can be said for tourism that it is the first (or one) out of five basic areas of material production. Given the fact that there is a multiple direct connection between tourism and traffic, between agriculture and processing industry, and if we exclude extractive industry, tourism is then one of the four basic areas of material production.

Countries with developed tourism can, thanks to incomes from tourism, compensate for necessary goods of extractive industry, and so tourism can be treated as the first out of four basic areas of material production (tourism, agriculture, traffic and processing industry).

## Methodology

On the basis of research literature and analysis of the results, the authors sought to examine the initial research hypotheses that tourism directly stimulates the economic development in many ways, especially clarifying the impact of tourism on GDP (gross domestic product), NI (national income) and the multiplier effect of tourism on the economy.

Famous theorist development aspects of tourism Dulčić (2001), other than specified performance, highlights and other (employment, the development of underdeveloped areas, etc.) the positive effects of tourism on the economy.

The world famous founders of theoretical knowledge and learning on tourism, Krapf and Hunziker (1942), analyze developmental aspects of tourism in the wider context, giving special importance to the economy of tourism. Interestingly, the world-renowned theorist tourism Krippendorf (1986), through the analysis of the negative impacts of tourism on the natural and the life environment, indirectly associated developmental aspects of tourism to economic development.

According to the defined purpose of the research has dominated economic analysis of the economic effects of tourism and developing a theory of the research results.

In order to respect the principle of contradiction and the principle of sufficient reason used the knowledge and skills of ontology. Also, there were used: the method of correlation, historical and comparison method.

## Tourism in the light of inconsistency between techno-economic and socio-economic sphere development

Given the financial breakdowns and economic problems on a global level, the development of tourism as an economic activity in the future, should be sought through the analysis of relations, or rather interdependence of a techno-economic and socio-economic sphere in the context of total economics (Frolov, 2011).

The techno-economic and socio-economic sphere are interconnected according to a cause and effect model. Many economic phenomena, although seemingly unrelated, affect each other to a great extent.

"However, the fact that something is connected does not mean that one conditions another. The connectedness simply proves that there is a certain relation between two factors – let's call them factors X and Y – but it tells us nothing about the type of that relation. It is possible that X causes Y; it is also possible that Y causes X; and it is possible that X and Y are only the consequences of some third factor Z" (Steven, Stephen, 2006).

While analyzing the problems of the global "financial" crisis, Frolov (Frolov, 2011) rejects attitudes and opinions of numerous world theoreticians, thus indicating that solutions should be sought in the field of a techno-economic and socio-economic sphere by analyzing economic movements in a shorter and longer period, so called long and short waves. Although authors completely accept the attitudes of Frolov, it should be emphasized that all movements in both cited spheres are conditioned with institutional and evolutional economics, institutions and system institutes. One of the key problems lies in technology control, newly created values of these technologies and their redistribution, where benefits of a techno-economic sphere and newly created wealth do not reach, to a necessary extent, wider, middle and lower classes of a society.

"Economics is primarily the science of measurement. It has an extremely powerful and flexible group of resources with which a mass of data can be precisely processed according to which the influence of any individual factor, or even a joint action of all factors could be estimated" (Steven, Stephen, 2006).

Tourism cannot exist without transformational and transaction technologies, to whose significance in economic movements and economic development Frolov indicates in the context of technological determinism. As Frolov asserts "generally speaking, technologies are a way of using interrelated methods and instruments for the increase of certain activity efficacy according to whose character their classification is made. That is the reason why the delineation between transformational and transaction technologies is methodologically correct" (Frolov, 2011).

It is a fact that new technologies stimulate development, they stimulate the creation of not only a new product, but also new (it refers to expertise, training, and behavior) labour force, a new consumer society, new social norms and standards. "The change of technological orders requires, according to the rule, certain changes in a social and institutional system, which not only eradicate social tension, but also help the mass introduction of technology

of a new technological order (regime) according to needs and a way of life" (Frolov, 2011).

Namely, man is in the centre and he supports innovations, the creation of something new, but he also supports social norms. The success of new technologies (primarily the profit they will bring) depends on how wide they have "thrived" in a society or on the market. For example, it should be mentioned the inventions and discoveries of Nikola Tesla. New technology created by Nikola Tesla has existed for centuries. His contribution on a planetary level is immeasurable. More or less, it is present in all nations and in all spheres of life, while a number of other technologies (e.g. a pager, certain types of mobile phones, etc.) had a short lifetime.

It is true that the techno-sphere requires new changeable capital necessary in technological processes – in production, but it also requires much fictitious capital (embodied) in the very equipment – machines necessary in the production phase. As Daković (1992) claims, technology – machines swallow a lot of live work (so called embodied labour) in the process of creation, while later on in their functioning they require less live but more professional and expensive work. Without respecting the principles and interests of a socio-economic sphere, and in the absence of system institutions the techno-economic sphere will go to uncertainty (Galbraith, 1987).

However, apart from all economic problems and disruptions, also confirmed by empirical research, the only economic activity (or the model of economic development), which, regardless of all disruptions in economy, records further growth, is tourism.

The above mentioned arguments and facts confirm the fact that tourism is an economic activity which in a specific way stimulates growth, uses benefits and connects one and the other sphere. The growth and development of tourism on a planetary level is, on the one hand, inconceivable without new technologies, while on the other, the consumer (or economic) component of tourism stimulates economic growth (the development of economic processes).

### Tourism development performances on a global level

World tourism makes 10% of the world's total gross domestic product and it generates annual income of more than 1000 billion USD and employs 200 million people (UNWTO, 1998).

**Chart 1.** The number of total international tourist arrivals, in billion USD
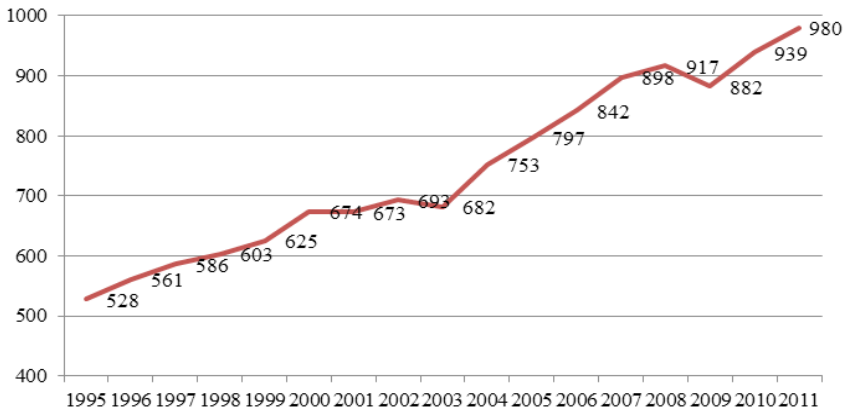


*Source: Vujovic,* Filipović, Marković, 2012.

Over the last six decades tourism has experienced expansion and diversification, thus becoming one of the biggest and fastest growing sectors of an economy.

Even the data of the World Tourism Organization and the International Monetary Fund (UNWTO, 1998) speak in favour of that and they show that tourism is one of the five leading export activities in 83% of world countries and the main source of foreign income for at least 38% of countries.

Despite negative economic movements and political turbulence, the number of international tourist arrivals is on the constant increase *(Chart 1)*.

The global economic crisis had an impact on tourism, but the world tourist industry recovered as soon as 2010. So, in 2010 a 7% increase of foreign tourist arrivals was recorded, while in 2011 the number of international tourist arrivals had an increase of 4.6%.

According to the data of the World Tourism Organization, in the first quarter of 2012 the number of total international arrivals was 5% bigger compared to the same quarter of the previous year. With existing annual growth rates of international tourist arrivals (the average annual growth rate has been 4.4% since 1990), it is expected that by 2020 there will be about 1.6 billion foreign tourists worldwide (Premović et al., 2012).

Europe is still the leading tourist destination which accounts for more than a half of total tourist visits. During 2011, 504 million tourist arrivals were recorded in Europe. A 6% increase of visits compared to 2010 secured Europe's position of the leading tourist destination. The increase of international tourist arrivals is especially noticeable in the Mediterranean part of Europe which otherwise accounts for 19% of world tourism. During 2011 the increase was achieved by Greece (10%), Turkey (+9%), Portugal (+9%), Croatia (+9%), Spain (+8%) and Italy (+6%). It is interesting that other less touristically developed destinations achieved even a double-digit increase: San Marino (+30%), Macedonia (+25%), Serbia (+12%), Montenegro and Cyprus (+10%). The increase of tourist visits

in the Mediterranean part of Europe is the consequence of riots in North Africa and the Middle East, but it is also the consequence of aroused interest of tourists from Scandinavian countries, Russia and Germany.

## The influence of tourism on the balance of payments, GDP and NI

It is common knowledge that tourism as an economic activity, through numerous functions, has an extremely wide and heterogeneous impact on the economy and society. Some theoreticians cite as basic functions: health, technical, cultural-social, economic and political functions. Certain theoreticians cite as basic functions: economic, health, cultural-educational and political functions while others speak about groups of functions – a group of economic functions, as a dominant one, adding to it: health, social, political, educational-cultural functions and a recreational-entertaining function.

In literature on basic questions about tourism, the division to primary and consequential functions is interesting, where under primary functions a group of economic functions is emphasized, and under consequential all other non-economic functions (Bakić, et al., 1999).

According to theoretical researches, realized through literature, as the main division of all functions of tourism, authors of the work cite the division into: economic and non-economic functions.

As a part of economic functions there stand out functions of direct (influences on the balance of payment, national income, on employment and etc.) and functions of indirect influences (influences on other economic activities), however, one should not forget multiplicative effects and so called other functions of tourism, especially the foreign one. Regardless of all values and knowledge of statistics, hospitality and tourism records and analyses, it is impossible to perform a hundred percent tracking of tourism effects.

With direct influences or effects of tourism on the balance of payments, GDP and NI, incomes obtained from foreign tourists' spending, so called invisible export has special significance. The invisible export gives tourism a special advantage in relation to all other economic activities and sectors. The invisible export and invisible import directly influence the balance of payments of a country, except that the invisible export has a positive impact and the invisible import has a negative one. A positive difference, i.e. bigger invisible export than invisible import, increases the balance of payments, while the opposite situation decreases the balance of payments. Foreign tourists' spending has a direct impact on the overflow of national income between economies, from the countries from which tourists come, a part of national income overflows into the countries in which tourists come and spend.

In the *Table 1.*, there are data of tourism participation in GDP in the world, the EU and individual countries, in the period from 2007 until 2014 and the projection for 2015. According to the data of World Travel & Tourism Council (WTTC), the total contribution of tourism to GDP in the world in the period from 2007 until 2015 will, on average, amount to 9.25%.

**Table 1**. Participation of tourism in GDP, in %

| World, region and country | Year | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
| WORLD | 9.6 | 9.4 | 9.3 | 9.0 | 9.1 | 9.1 | 9.2 | 9.3 | 9.3 |
| Europe | 8.1 | 8.0 | 8.0 | 7.7 | 7.6 | 7.7 | 7.6 | 7.6 | 7.7 |
| EU 27 | 8.3 | 8.1 | 8.1 | 7.8 | 7.8 | 7.8 | 7.8 | 7,8 | 7.9 |
| Croatia | 27.6 | 28.5 | 25 | 26.3 | 27.5 | 29 | 29.7 | 30.1 | 30.5 |
| Macedonia | 5.1 | 5.2 | 5.2 | 5.1 | 5.2 | 5.5 | 5.6 | 5.7 | 5.7 |
| Montenegro | 21.6 | 24 | 16 | 15.7 | 17.1 | 19.7 | 22.9 | 25.5 | 27.4 |
| Serbia | 6,1 | 5.9 | 7.5 | 7.8 | 8.0 | 8.0 | 8.0 | 8.0 | 7.9 |
| Austria | 12.1 | 12 | 12.3 | 11.7 | 11.8 | 12.2 | 12.5 | 12.6 | 12.8 |
| Greece | 17.3 | 16.5 | 15.2 | 15.3 | 15.7 | 16.3 | 16.7 | 16.9 | 17.1 |
| Italy | 9.3 | 8.7 | 8.4 | 8.4 | 8.5 | 8.7 | 8.8 | 8.9 | 9.0 |
| Portugal | 13.6 | 14.2 | 13.3 | 13.8 | 14.7 | 15.1 | 15.4 | 15.6 | 15.7 |
| Spain | 14.9 | 14.9 | 14.7 | 14.3 | 14.3 | 14.4 | 14.4 | 14.3 | 14.3 |

*Source:* Đuranović, Radunović, 2011.

Incomes from foreign tourism directly represent a causal correlation between tourism and real economic growth, indicating both at the short-term and long-term connection between them (Norsiah, Karim, 2012).

More concrete tracking of tourism effects on the balance of payments, GDP and NI can be analyzed through GVA (gross value added) where the contributions of individual sectors within tourism (hotel industry, gastronomy, private accommodation, transportation) are concretely followed.

Tourist balance as a part of the total balance of payments, gives a detailed review of all incomes and expenses from tourism. In a broader sense it includes all incomes from the sale of goods and services to foreign tourists, incomes from investments in foreign tourist economies, incomes generated through the export of goods and services for the purposes of foreign economies tourism, then incomes from various taxes paid by foreign tourists, while in the narrow sense it includes only incomes from the "invisible" export (incomes obtained from foreign tourists' spending) and the "invisible" import (all travel expenses of local citizens abroad).

The balance of payments, as above mentioned, is influenced by tourism primarily with incomes from foreign tourists' spending. If a country X, for example, has a deficit in the balance of payments of 10 million dollars (it means that it imports more goods and services than it exports whose value is more than 10 million dollars, in a certain period – most often a year), it can solve its problem if it generates surplus in the tourist balance with that or even bigger amount than 10 million dollars, thus covering the existing deficit of the balance of payments with surplus in the tourist balance.

There are, of course, other situations in practice where, e.g. surplus in the balance of payments in the amount of 18 million dollars, a certain economy increases, if it has also generated surplus in the tourist economy of 8 million dollars, recording total surplus of 26

million dollars, or e.g. a situation where the generated deficit of 80 million dollars, a certain economy can aggravate if it generates a deficit from tourism incomes in the amount of 4 million dollars, recording the total deficit of 84 million dollars, or a situation when a certain economy covers the generated deficit of 5 million dollars in the tourist balance with surplus of 120 million dollars generated in the balance of payments.

How and how much NP (national product) overflows from specific economies into other economies can be seen through the tourist balance of those economies. Emitting countries are considered to be those countries which overflow part of their NP into other countries on the basis of tourists' spending, thus generating a negative balance in the tourist balance, while countries which generate a positive balance in the tourist balance are considered receptive countries.

## Tourism in the function of a stimulating factor of an economic process

The relation between production and consumption units, market mechanisms (functioning of the market) and the behavior of economic subjects on the market are aspects which enable the understanding of tourism in an economic process.

Two basic factors of tourism "free time and free money" which are on the one hand the aim of human creation and aimed at meeting the needs for luxury, holiday, recuperation and recreation, are in a direct connection with the basic human relation, the relation between limited goods and unlimited needs.

This relation, in turn, leads to the basic relation or condition for man's survival, and that is the relation between man and nature.

"First of all man has to work, i.e. produce diverse goods, so that he could, by using those goods, meet different needs. Nevertheless, his capabilities for goods production are limited because resources are limited, unlike needs which are, as a rule, above production capabilities" (Dulčić, 2001). All goods which man creates (they are not an aim unto themselves, but money and other goods which the same producer buys on the market for money so that he could meet certain needs) are produced in production units (most often in some enterprises), and they are spent by consumers, or man as a consumption unit with the aim of meeting his needs.

As Milanović (Milanović, 2007) cites *in Microeconomics, as a branch of economics, the analyses of the behavior of individual economic units, household consumers and producers/ enterprises dominate*.

By travelling and spending his earned money and free time with the aim of meeting his needs, man, in the role of a tourist, again sets in motion a number of production units (hoteliers, caterers, food producers, traffic, a construction sector, numerous agents on the tourist market, etc.).

**Chart 2.** Production and consumption units in an economic process
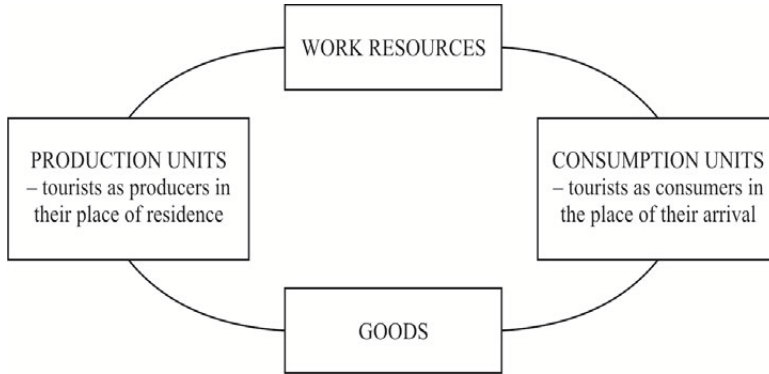


*Source:* Dulčić, 2001.

Namely, money earned in production units a tourist spends without excluding it from an economic process, but striving to meet his own tourist needs with the money, he sets in motion a number of other production units where the production and consumption process continues *(Chart 2)*.

As Dulčić cites "Production is not an aim unto itself, but man works so that he could survive and perform other numerous activities. Keyns (John Maynard Keyns) will say: *consumption is the only aim and the sole purpose of the entire economic activity*" (Dulčić, 2001).

According to conventional definitions and acceptance of terms "a tourist and tourism" Keyns's thesis implies the essence of tourism.

A constant desire for change, understanding of new things or emphasizing "bad adaptation" with all levels of a social community, generates consumption, which in the context of economic processes – economic development gives tourism an advantage in relation to other economic activities. If a consumer has limited free time and free money, as a consequence there will be reduction in consumer goods and services production and consumption.

The relation between resources and needs indicates that all man's efforts are directed towards harmonizing needs and capabilities. Tourists' needs are manifested through the tourist's spending, and they are quantified with the amount of spent-bought.

Dominance of commercial motives on the supply side gives an advantage to an economic approach and economic interests, while, a spatial approach implies, as a benchmark or basis always a certain destination or a tourist spot (Vujović et al., 2011).

According to above mentioned attitudes connected with the defining of tourism in an economic process, through relations between production and consumption units, it is necessary to underline that the market mechanism is unavoidable.

A systematic approach to the market, in the context of the above emphasized economic process, implies functioning of the goods-services market and factors market, as subsystems

or partial markets. Participants in an economic process on these partial markets establish mutual relations in which prices and amounts of required goods and services are determined.

## Conclusion

Factors "free time and free money" as a prerequisite for tourism development, are conditioned with a basic economic problem "a gap between unlimited needs and limited capabilities". Here the question arises as to what "free money" is, or, after meeting which needs the rest of the money can be considered free money. However, it can be assumed that anyone who appears in the role of a tourist has previously met certain levels or groups of needs – existential, safety, etc.

Basic factors of economics: work, land and capital, with later added also as basic: information, time and space, tourism implies as basic factors of tourism development, except that in the foreground of previous six factors tourism sets man, as the holder of free time and free financial means and the holder of development.

Fundamental questions of economics: what should be produced, how and for whom, have the same significance and role even in tourism – which tourism goods and services should be produced, with which technologies and for whom (which markets) should they be produced.

Factors which influence the behavior of consumers in tourism as subjects of consumption: tourists' needs, income and prices, also have an impact on the behavior of every economic subject on the market.

Consumption and the behavior of consumers on the tourist market are conditioned by numerous factors, whose interaction has led economic theoreticians to conclude that there exist regular phenomena which create movements of supply and demand.

Some of the examples of developmental aspects of tourism on a global level, are reflected in the overflow of personal and thus also national incomes between countries, but without common export-import licences, treaties or agreements of governments, or any other bilateral cooperation. E.g. if 1000 tourists from Hungary spend in Serbia (each $1000) one million dollars in total, it means that the sum of personal incomes of 1 million dollars which belong to Hungarian citizens has overflown into Serbia, in Serbia's GNP.

It is especially interesting to mention what Serbia has sold for those one million dollars. It has sold, or exported at home, besides a number of material goods and services, also a number of immaterial values which can neither be packed, standardized, nor in any other way exported, which presents particularities unique to tourism as an economic activity or a model of economic development.

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# UTICAJ TURIZMA NA KRUŽNI TOK EKONOMSKOG PROCESA

*Slavoljub Vujović[4], Nikola Ćurčić[5], Vuk Miletić[6]*

## Rezime

*Odnos proizvodnih i potrošnih jedinica, tržišni mehanizmi i ponašanje ekonomskih subjekata na tržištu su aspekti koju omogućavaju spoznaju turizma u ekonomskom procesu.*

*Dva osnovna faktora turizma "slobodno vreme i slobodan novac" kao cilj stvaralaštva svakog pojedinca, nastojeći da zadovolji potrebe za luksuzom, odmorom, oporavkom i rekreacijom, u direktnoj su vezi sa osnovnim ekonomskim odnosom, odnos između ograničenih dobara i neograničenih potreba. Neuvažavanje principa i zakonitosti socio-ekonomske sfere, od strane dinamike razvoja tehno-ekonomske sfere, sve većih razlika između siromašne većine i bogate manjine, u celom svetu, uzrokuje mnoge ekonomske i društvene probleme. S obzirom na ekonomske probleme na globalnom nivou, dalje pravce razvoja turizma treba tražiti kroz analizu odnosa, ili bolje reći, međuzavisnosti razvoja tehno-ekonomske i socio-ekonomske sfere. U radu se nastoji da se odredi i pojasni značaj turizma kao podsticajnog faktora kružnog toka ekonomskog procesa.*

***Ključne reči:*** *turizam, ekonomija, razvoj, privreda.*

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*Anđela Marković[2], Petar Petrović[3], Mirko Mirković[4]*

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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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## Introduction

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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).

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9. *Naziv zakona/uredbe*, Službeni glasnik, Zemlja, br. i godina izdanja.

10. *Naziv standarda*, Standard br. xxx, izdavač standarda, godina izdanja, Mesto, Zemlja.

*Notes:*

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