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THE AGRICULTURE SECTOR IN WESTERN BALKANS – SOME CHARACTERISTICS OF DEVELOPMENT

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Summary

Agriculture in the Western Balkan countries has the significant role. It has the highest share in GDP right after the industry. However, transition processes as well as the breakup of former Yugoslavia caused serious stagnation in this economic activity in almost all its areas. Measures and actions taken in order to make an unfavourable situation in this sector better, did not bring results which had been expected. The recovery of agriculture is still slow and faces numerous obstacles. The aim of this paper apropos is to analyse the role of this sector in Western Balkan economies by using the multi-criteria analysis or more precise PROMETHE GAIA methodology. Obtained results indicate that agriculture sector has the most significant role in Albanian economy, followed by FRY Macedonia, Bosnia and Herzegovina, Serbia, Croatia and, at the very end, Montenegro.

Key words: agriculture, Western Balkans, economic development, multi-criteria analysis.

JEL: *Q10, Q16,*

Introduction

At the beginning of XXI century, the European Union formulated the name of the region – Western Balkans, to indicate the group of Balkan countries which are not members of the European Union, but strive to become the members. In that sense, this region consists of

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countries of former FR Yugoslavia (excluding Slovenia) and Albania (Fedajev, 2015). In the mid-2013 Croatia has become the member of EU, but many authors still include this country in the analysis of this region, as a good role-model for other states.

Agriculture has its long tradition in the Western Balkans. It represents one of the oldest activities in human society, being one of the predominant occupations of the population even today. For many years agriculture had been the main occupation of the population in this region, but, over time, it was overtaken by the industry (Nikolić, 2012). Nevertheless, agriculture still brings a significant contribution to economic development of the countries in this region. Historically, agriculture in the Western Balkans was very obsolete and underdeveloped during the first half of XX century. So, it could not provide enough food for the population nor raw material for already undeveloped food industry as well as other processing industries. It had natural character, with only one-third of the production realized through the market. During the Second World War modest agricultural capacities were largely destroyed and devastated. This particularly affected agro-industry causing its severe collapse.

After the war, special attention was paid to food production. It became one of the priority activities in economy. By taking various actions and measures its accelerated development was being boosted even more. The achieved effects were obvious in all aspects of production (The Federal Statistical Office, 1986). The average annual agricultural production growth rate on the territory of former Yugoslavia (now independent states: Slovenia, Croatia, Bosnia, Montenegro, Serbia and Macedonia) in the period from 1945 to the 1990s was close to 3%, although it had always been lower than the industrial production growth rate. The total agricultural production was three times larger, with significantly increased livestock and altered cattle breeds; fruit orchards and vineyards were expanded, and the application of modern techniques and technologies, along with agro-technical measures in the production, enabled increase in yield of the most important crops from 1 up to 1,5 times. Due to afore mentioned progress the following production results were visible in the mid 80's: this region produced 1% of total wheat production in the world; 2% of corn; 2.4% of sugar beet, 1.1% of all kinds of meat (0.8% of beef and 1.4% of pork) as well as 1% of cow milk. The share in European production of food was much more significant (Nikolić, 1999). At the same time, Albanian agriculture also recorded a remarkable progress. Its development was directly controlled by the state.

However, since the 80's, the growth rate in agricultural production in former Yugoslavia had been slowing down. Stagnation was especially noticed in livestock production, mainly in the private sector. Such conditions were further worsened by the events related to the breakup of the country in the 90s, causing consequences such as breakup of unified market, war devastation of agricultural and agro-industrial resources, limitations in the export of agricultural and agro-industrial products and the import of the necessary input for their production, insufficient application of modern techniques and technologies, decrease of domestic demand due to the economic crisis and downfall of life standard of the population. Agriculture suffered yet another decline, although even in such circumstances, it managed to endure the greatest burden of the crisis which the economies in the region had been affected by. Meanwhile, in Albania, the agricultural production growth had continued with slight oscillations. Modest agricultural capacities were still unable to feed the population, so the necessary food was provided by import. Albania was famous for production and export of tobacco, alcoholic beverages and wool. (Marković,1989).

Transition processes in Western Balkan economies which also included reforms of agriculture sector started in the early 90's (Stojanović, 2005). The aim was transition from a non-functional and a non-efficient system into a modern, open and diverse market based economy (Zec, Živković, 1997) which would create the conditions for overcoming the crisis as well as establishing long term sustainable development. For agriculture, it meant creating favorable ambience for market economy, thus, greater efficiency in business activities. During the 90's, transition processes were very slow followed with difficulties and uncertainties. At that time the political situation in the region was unstable which considerably contributed to the situation. (Uvalić, 2011). Besides, no one was ready for substantial and comprehensive changes, not even the authorities. Hence one can say that the true reforms began in the early 2000's, with radical changes in all aspects of both economy and society. Some countries, created after the breakup of Yugoslavia, had certain advantage at the beginning of transition, due to reforms they had performed earlier, which transformed them in a kind of "semi market oriented system" (Nikolić, Fedajev, Riznić, 2013). However, delay in conducting reforms in the 90s as well as many obstacles following the whole process on one hand, and faster progress in the rest of transitional countries, especially Central and Eastern European countries, on the other, caused that even today Balkan countries are in the last position at the transitional countries' ranking (Kovačević, 2011). The exception is Croatia which successfully managed to complete the reforms and in 2013 it joined the European Union. Even Albania, which had unfavourable starting position, managed to reform certain economic areas faster than the countries formed after the breakup of Yugoslavia.

In agriculture, transition processes were carried out in accordance with the changes of the general economic situation in a country. Due to the fact that most of the agricultural land in former Yugoslavia was owned by private owners, the problems which occurred during the ownership changes in state owned companies, were being avoided. Namely, many of large agricultural enterprises went bankrupt after privatization, while some of them are still owned by the state. On the other hand, Albania successfully managed to privatize agricultural land. It also achieved an overall progress in agriculture, thus achieving a fairly high economic growth rate during the nineties (Rikalović, 1999).

This paper is focused on the investigation of agriculture role in Western Balkan economies in the period between 2001 and 2012, i.e. on the period when the economic reforms in these countries were most intensive. In order to get a more complete insight into implemented changes and reforms so far, a multi-criteria analysis was applied, the PROMETHEE GAIA method to be more precise. Usage of this method enabled the ranking of the countries based on some important indicators that reflect the role of agriculture in the economy.

Methodology

In order to perform a comparative analysis of the importance of agriculture sector for economic development, multi-criteria analysis has been applied. The aim of multi-criteria analysis is to rank numerous alternatives from best to worst, based on a large number of opposing criteria. One of the most commonly used methods of multi-criteria analysis is PROMETHEE GAIA method, developed by Brans, Vincke and Marshal during the late XX century (Brans, Mareschal, Vincke, 1984,Brans, Vincke,1985). The PROMETHEE GAIA methodology was conducted on the biases of data on gross value added in agriculture (% GDP) from World Bank database, employment in agriculture (% of total number of employees) from national statistical offices, balance of agriculture trade and net production index number from FAOSTAT in 2012, as an end of the period.

PROMETHEE GAIA methodology

In recent years, a large number of methods for decision support have been developed in order to facilitate finding the best compromise solution. One of them is certainly the PROMETHEE method developed by Jean-Pierre Brans and Bertrand Mareschal. This is one of the newest methods in multi-criteria analysis, and it is known as one of the most effective and the simplest in this field. The advantages of this method lie in the way of structuring the problem, in the amount of data that can be processed, the possibility of quantifying qualitative data, good software support and presentation of results (Obradović, Fedajev, Nikolić, 2012).

The PROMETHEE method is an adequate method for solving problems whose aim is multi-criteria ranking of final set of alternatives (in this case Western Balkan countries) based on a number of criteria which need to be maximized or minimized. For each observed alternative it calculate its value expressed in level of preferences. Thereby, each alternative is evaluated based on the two preference flows. Positive preference flow ϕ + (P) indicate how much is given alternative better than the other (according to all criteria). Accordingly, the higher this preference flow is, the alternative is better. The negative flow of preference ϕ - (P) indicates how much a given alternative is worse than the rest, and therefore if this flow is lower, the alternative is better. After that, the PROMETHEE method accounts net preference flow ϕ (P) as the difference between these two flows (Brans, Mareschal, Vincke, 1984, Brans, Vincke, 1985).

On the bias of such calculated net preference flow, final ranking of alternatives is performed, from the best one, with the highest net preference flow, to the worst one, with the lowest net preference flow. To calculate mentioned flows, PROMETHEE method requires the specification of appropriate parameters for each criterion (Brans, Mareschal, Vincke, 1984; Brans, Vincke, 1985):

- 1. Direction of preference, minimizing or maximizing;
- 2. Weight coefficients, indicating the importance of certain criteria;
- 3. Adequate preference function, that converts the difference between the two alternatives in the level of preference, which ranges from 0 to 1. In PROMETHEE

methods following preference functions are available: Linear, Usual, U-shape, V-shape, Level and Gaussian;

- 4. Preference threshold (p), which represents the minimum deviation that decision maker considers important for the decision making;
- 5. Indifference threshold (q), which represents the maximum deviation that decision maker considered irrelevant for the decision making.

After defining parameters, PROMETHEE methodology is used, which consist of next steps (Behzadian, Kazemzadeh, Albadvi, Aghadasi, 2010):

1. First, deviation based on comparison of pair of alternative is calculated

$$d_j(a,b) = g_j(a) - g_j(b) \tag{1}$$

Where dj(a, b) represent differences between the value of alternative a and b according to every criteria.

2. After, the chosen function of preferences is used:

$$P_j(a,b) = F_j[d_j(a,b)]$$
⁽²⁾

Where Pj (a, b) represents preferences alternative *a* for each alternative *b* within every criteria, as a function of dj (a, b).

3. Further, the general index of preferences is calculated:

$$\forall a, b \in A \ \pi(a, b) = \sum_{j=1}^{n} P_j(a, b) w_j \tag{3}$$

Where π (*a*,*b*) stands for weighted sum P (*a*,*b*) for each criteria, while w_j stands for weighted *j* criteria coefficient.

4. Then, the positive and negative course of preferences are calculated:

$$\varphi^+(a) = \frac{1}{m-1} \sum_{x \in A} \pi(a, x) \tag{4}$$

$$\varphi^{-}(a) = \frac{1}{m-1} \sum_{x \in A} \pi(x, a) \tag{5}$$

Where ϕ + represents positive and ϕ - negative preferences values for each alternative.

5. Finally positive and negative courses of preferences are used to calculate net flow of preferences and rank alternative:

$$\varphi(a) = \varphi^+(a) - \varphi^-(a) \tag{6}$$

Where $\varphi(a)$ stands for net course for each alternative.

On the bias of $\phi(a)$ value the countries are ranked from best to the worst, having in mind all observed criteria.

Role of the agriculture in economy

Bearing in mind that all Western Balkan countries are transition economies and that they have favourable geographic and climate conditions for agricultural production, their development is still mostly dependent on agriculture sector performance. Most of them have significant share of agriculture employees in total number of employees, the agriculture production records relatively high growth rates (contributing to the level of total production in country), foreign trade of agriculture products enables the reduction the trade deficit in these countries (which is significant problem in most of transition economies) and the gross value added in agriculture contributes greatly to the creation of GDP.

But, these countries, also face significant limitations in the agriculture development, like fragmented farm-holdings, low productivity, the use of outdated techniques and technology, low level of investments (caused by insufficient investment capacities and lack of interest for investments), low level of business activities, undeveloped infrastructure, low income and lack of alternative types of financing (Stojadinović Jovanović, Dašić, 2015). Depending on the extent to which they have managed to reduce the effect of these factors, the Western Balkan countries have different performances of their agricultural sector.

Employment

Despite an evident deararization during the second half of the last century, a large part of the population in the Western Balkans was still employed in agriculture. This situation was largely retained, even in the period of transition, although it had been expected that some of the workers from industrial companies which went bankrupt, would return to their villages and re-engage themselves in agricultural production.

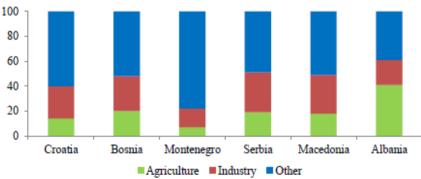


Figure 1. Employment trends in agriculture, industry and other sectors in 2012.

Source: Author's calculations based on data from National Statistical Offices of observed countries.

It is obvious from the Figure 1 that Albania has a very high employment in agriculture, 41.5%. This defines the country as agricultural. After Albania come Serbia and Bosnia with 20% of agricultural population. Macedonia follows, with 17.3%, Croatia with 13.7% and Montenegro with only 5.7% of the total number of employees. In the EU that figure is around 6%.

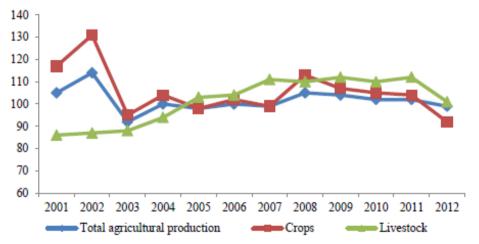
Particular problem is the age structure of employees in agriculture, due to the dominance of the elderly population. That is particularly true for Montenegro (Božović, Đurašković, 2014). The young are less motivated to stay in the village and work in agricultural production. Hence, year after year, many villages located south of the Sava and Danube rivers, are becoming uninhabited and huge complexes of agricultural land are being abandoned and overgrown with weeds.

Trends in Agricultural production

Available resources for development, position and role in the economic system are the main preconditions for the agriculture development, and therefore for the development of both volume and structure of its production. Therefore, the achieved level of agriculture production significantly varies in Western Balkan countries.

Croatia

Croatia represents one of the larger agriculture producers in the region, right behind Serbia. It has solid development resources. Crops are dominant in plain areas, orchards and vineyards in hilly areas, livestock production in the mountains while Mediterranean cultures are present on the coast. In the structure of total agricultural production, in 2012, crops production prevailed with 63% and farming had the leading position. In livestock production - pig breeding was dominant.



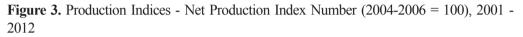


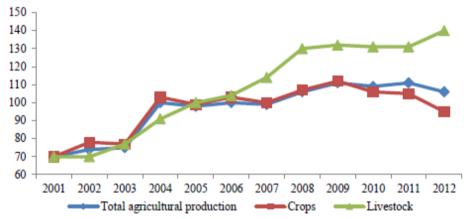
Source: FAOSTAT database.

After certain stagnation came a period of slow growth in the total agricultural production. Crops production had significant oscillations while livestock production showed a more stable growth. In the production of crops, cereals were predominant with presence of vegetables, industrial and forage plants as well.

Bosnia and Herzegovina

Bosnia and Herzegovina is mostly mountainous country with some parts of hilly areas and the plains in the valley of rivers. These resources determined agricultural development of the country.



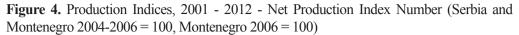


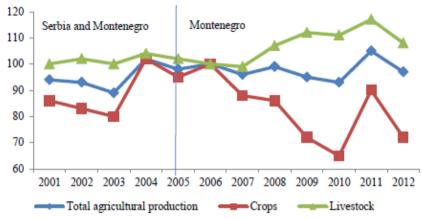
Source: FAOSTAT database.

The total agricultural production value had a trend of constant growth, where livestock production growth was pretty faster, while crop production varied a lot.

Montenegro

Besides tourism, as the leading economic sector, Montenegro paid a certain attention to agriculture production. Considering the available resources, the production level was mostly modest. Agriculture held a 9% share in GDP, or 18% together with food industry.





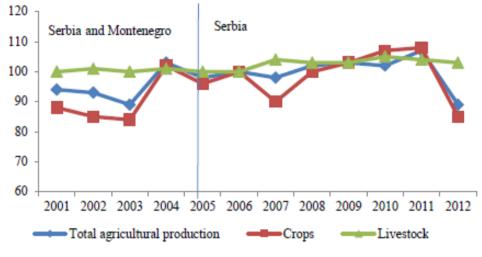
Source: FAOSTAT database.

The total agricultural production was increasing slowly. The production of crops was increasing more rapidly, but with oscillations. Its share in the structure of agricultural production reached 63%. At the same time, livestock production had rapidly been decreasing.

Serbia

Serbia has very favorable conditions for the development of various agricultural production segments. Fertile plains, hilly areas with vast meadows and pastures, suitable climate and dense network of river flows are the basic natural amenities of this area. Moreover, Serbia has long tradition of farming. However, these favorable agriculture development resources were not valorised adequately. Since the 80's, and especially 90's, there had been a trend of decrease in production in many sectors of agriculture. During the intensive transition, after 2000, there had been a certain increase of production with occasional oscillations. Livestock production had firmer stability, while the production of crops recorded its ups and downs. Two major downfalls of crop production occurred in 2007 and especially in 2012. A change in the structure of production lost its position in favor of crop production.

Figure 5. Production Indices, 2001 - 2012 - Net Production Index Number (Serbia and Montenegro 2004-2006 = 100, Serbia 2006 = 100)



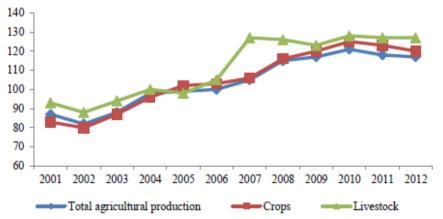
Source: FAOSTAT database.

In recent years, the situation in livestock production has been slightly better. Wheat production is dominant in the structure of crop production. Also, most of agricultural land is covered with vegetables, industrial and forage plants.

Macedonia

Agriculture has an important position in the economy of Macedonia. It has many natural advantages, such as favourable relief, climate and water resources. Traditionally, Macedonia has always been well known for the production of quality vegetables, fruits and grapes.

Figure 6. Production Indices – Net Production Index Number (2004-2006 = 100), 2001 – 2012

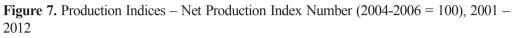


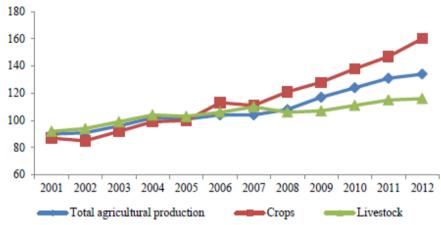
Source: FAOSTAT database.

The total agricultural production has had a trend of constant growth, mainly due to livestock production, which had a significant increase in the observed period. Crop production also recorded increase.

Albania

Albania pays special attention to the development of agriculture. The area is convenient mainly for livestock production, while river valleys and sea coast are suitable for growing crops and fruits.





Source: FAOSTAT database.

After a strong downfall at the beginning of transition processes, Albanian agriculture production has recorded significant growth since 2001, both in crops and livestock.

Foreign trade of agricultural products

After meeting their own needs, the countries of Western Balkans exported a certain share of their agricultural and food products. During the observed period, trade was mostly realized between Balkan countries themselves, through CEFTA agreement. The greatest exporters of agro-food products in the region are Serbia, Croatia and Macedonia, while Croatia and Bosnia are the greatest importers. Serbia is the only country in the region with a surplus in the agriculture products balance of trade.

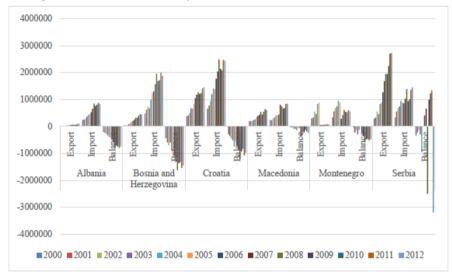


Figure 8. Agriculture and food industry trade, 2001 – 2012

Source: FAOSTAT database.

In 2012, the total export of agro-food products from the Western Balkan countries reached 5.369.183.000 USD, and at the same time the import reached 8.139.197.000 USD. Serbia is a leader in export, with 2.7 billion USD, followed by Croatia (1.4) and Macedonia (0.64). Croatia is the leading importer, with 2.5 billion USD worth import in 2011, followed by Bosnia and Herzegovina, with approximately 2 billion USD.

Gross value added

Economic crisis, caused by the breakup of Yugoslavia in the 90's, negatively influenced the entire economy of the region including agriculture as well. Unified market fell apart, former republics became independent states, previously established trade arrangements was reduced or terminated, financial sanctions and devastation caused by civil war had considerably diminished agricultural funds. Furthermore, during transition, a majority of large agricultural concerns were closed, along with many small agricultural cooperatives which were holders of agricultural production. Even in such circumstances, agriculture, even though carrying the burden of economic crisis, managed to survive. Over time, with improvements in political and economic ambience in the region, the situation in economy as well as in agriculture became more favourable. The volume of production increased, foreign trade and life standard of the population started to improve. However, due to the accelerated development of other economic areas, such as industry and service sector, the share of agriculture in GDP had been constantly decreasing. In 2012, Albania has the highest contribution of agriculture in creation of gross added value among countries in the region, reaching 22%.

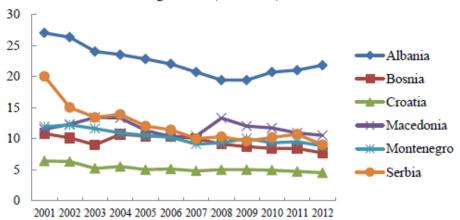


Figure 9. Gross value added in agriculture (% of GDP)

Source: World Bank.

Other Western Balkan countries are far below Albania by the share of GVA in GDP – FRY Macedonia with 10%, Serbia and Montenegro with 9%, Bosnia with 8% and finally Croatia with 4%. It is being expected that the trend of decrease of this indicator will continue in the future.

Ranking results

The multi-criteria analysis was conducted by using the Visual PROMETHEE software package, which has the ability to present the results graphically and, thus, to provide the more complete picture of the observed problem. As it is mentioned above, conducting the multi-criteria analysis, using the PROMETHEE GAIA method, requires the definition of certain parameters. In this regard, Table 1 presents the parameters of the multi-criteria model.

As it can be seen from Table 1, all indicators should be maximized in order to investigate which one has the greatest importance of agriculture sector in the economy. Also, linear preference function, with appropriate preference threshold and indifference threshold, was applied (as the Visual PROMETHEE software suggested according to the data dispersion). Weights for all observed indicators are equal in order to perform objective analysis, without giving an advantage to any of them. All of this indicators give some important information about the importance of agriculture sector for economic development.

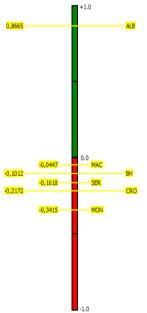
Parameters	Share of employees in agriculture in total number of employees	Net Production Index Number	Balance of agriculture product trade (% GDP)	Gross value added, agriculture (% of GDP)
Direction of preferences	Max.	Max.	Max.	Max.
Preference function	Linear	Linear	Linear	Linear
q	10	12	5,8	5,5
р	23	34	15,5	11,8
Weights	0.25	0.25	0.25	0.25

Table 1. The parameters	of the multi-criteria model
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Source: Author's calculations.

Using the mentioned parameters, PROMETHEE GAIA method was applied and the ranking results are shown in Figure 10. From this figure it can be concluded that the agriculture sector has the greatest importance for economic development of Albania, having in mind that it has the greatest net preference flow. Also, it should be noticed that only this country has a positive net preference flow. Albania is followed by FRY Macedonia, Bosnia and Herzegovina, Serbia, Croatia and Montenegro, whereby all these countries have negative net preference flow, thus, unfavourable position of agriculture in the economy.

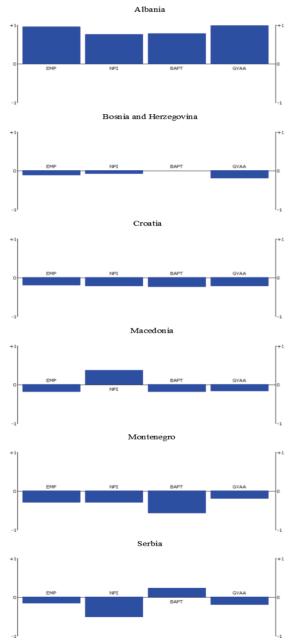
Figure 10. PROMETHEE II ranking results



Source: Author's calculations.

In order to realize which indicators contributed to such country ranking, the country profiles are shown in the Figure 11.

Figure 11. Country profiles



Source: Author's calculation.

This figure indicates that Albania has significant advantage in all observed indicators over the other Western Balkan countries and that explains why this country has by far the best position. Bosnia and Herzegovina has some disadvantages in employment, net production index and gross value added in agriculture, which positioned this country in the middle of the ranking list. Croatia has relative disadvantage in all observed indicators and such state led this country to the second last position. Its second position Macedonia has deserved by significant advantage in net production index. Montenegro has the significant disadvantage in all observed indicators, especially in the agriculture products balance of trade, and that is the reason way this country has the worst position on the rankings indicating that agriculture do not contribute much to economic development of this country. Finally, Serbia reached the fourth position due to advantage in agriculture production balance of trade and disadvantage in the remaining indicators, especially in net production index.

On the basis of the ranking results it could be concluded that all countries with negative preference flow should pay much more attention to agriculture, in order to improve their own agriculture sector. This especially refers to Montenegro.

Conclusion

The changes due to transition, which began in the 90's, brought radical alterations to each field of economy and society. That was a huge challenge for the newly formed countries in Western Balkans. The previous system, based on planned economy, that had been present for decades, was supposed to be abandoned and a new model, based on market laws, was supposed to be established. Additionally, economy of scale was supposed to be replaced by rational and profitable economy. Overall, despite some positive effects, the aims of transition have not been reached. Economies of the countries in the region are in very unfavourable position nowadays. Economy and industry is recovering slowly, unemployment is becoming a general problem of the society, external and internal imbalances reached a disconcerting level, the life standard is at a very low level and the problem of poverty is becoming more pronounced.

In such circumstances agriculture, one of the most vital sectors of economy for the countries in Western Balkans, has existed and functioned for years. Additionally, during transition, agriculture had faced further problems - crucial for its development. The most important were the disclosure of large agricultural enterprises, demesne fragmentation and insufficient cooperation and integration of small farmers, internal markets became unstable and nonregulated, strengthening of monopoles and occurrence of illegal trade, import of cheap agricultural products due to liberalization of foreign trade and, finally, inadequate and insufficient financial and credit support from the government. These were, among others, some of the most important reasons for slow and difficult reforms in agriculture and the reason why market model of doing business have not been applied properly.

Applied multi criteria analysis has shown that Albania has had the greatest contribution of agriculture sector to economic development, having in mind that this country recorded significantly higher values of observed criteria. Agriculture is one of the most important drivers of economic development in this country. Other observed countries have had a considerably smaller contribution of agriculture to economic development. So far from Albania, according to net preference flow, Macedonia is in the second place, Bosnia and Herzegovina, Serbia, Croatia follow, while the last position on ranking list belongs to Montenegro.

Finally, it should be emphasized that it would be unrealistic to expect radical improvements in the agriculture of Western Balkans, at least in the near future. It will take considerable time and finances to change the existing state and to create basic preconditions for the application of market based economy in this field.

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SEKTOR POLJOPRIVREDE U ZEMLJAMA ZAPADNOG BALKANA TOKOM PERIODA TRANZICIJE

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Apstrakt

Tranzicioni procesi u zemljama Zapadnog Balkana su otpočeti tokom poslednje decade XX veka. Inisijalni rezultati tranzicije su bili ohrabrujući, ali je ovaj pozitivni trend oko vrlo brzo. Posledice raspada bivše Jugoslavije (građanski rat, sankcije UN, etnički sukobi, NATO intervencija, itd) onemogućile su sprovođenje reformi. Nakon stabilizacije političke situacije početkom XXI veka, otpočete su radikalne reforme.

Poljoprivreda predstavlja veoma značajan sector u većini od ovih privreda. Ima najveće učešće u stvaranju BDP-a, odmah nakon industrije, i najveće učešće zaposlenih u ovom sektoru u ukupnoj zaposlenosti. Međutim, tranzicioni procesi i raspad bivše Jugoslavije uzrokovali su stagnaciju u ovom sektoru u gotovo svim aspektima privređivanja. Primenjene mere i aktivnosti usmerene na prevazilaženje nepovoljnog stanja u ovom sektoru nisu dale željene rezultate. Oporavak poljoprivrede je još uvek spor i suočen sa brojnim ograničenjima. U tom smislu, cilj ovog rada je analiza položaja ovog sektora u zemljama Zapadnog Balkana, primenom multikriterijumske analize.

Ključne reči: poljoprivreda, tranzicija, Zapadni Balkan, privredni razvoj, multikriterijumska analiza.

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